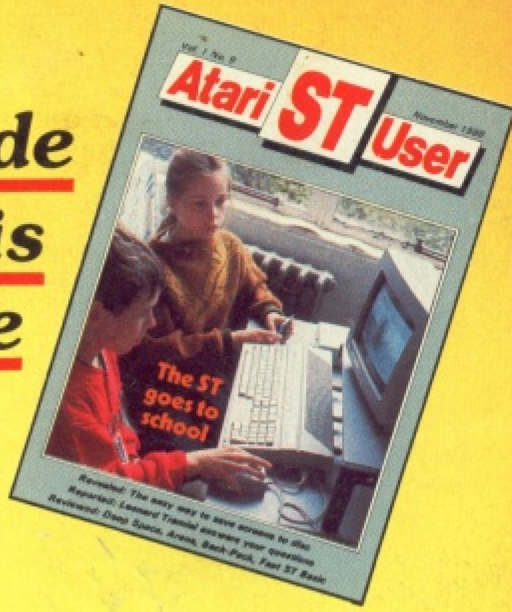
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Vol. 2 No. 7 November 1986 £1

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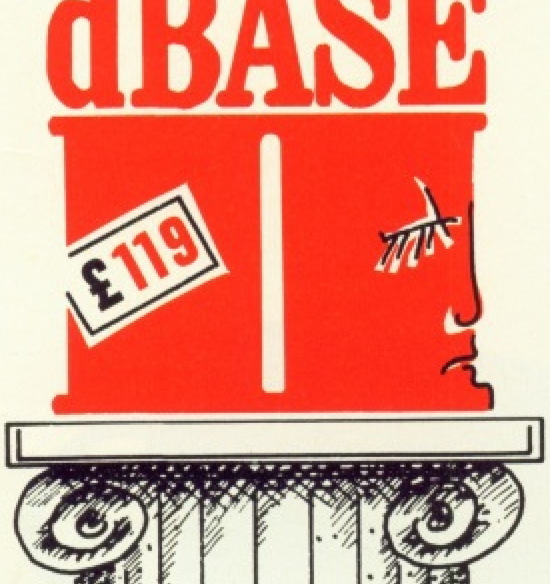
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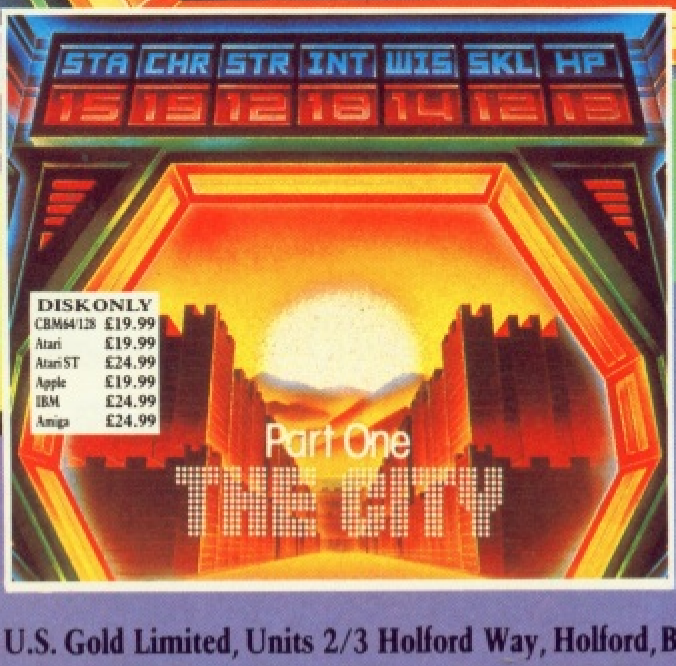
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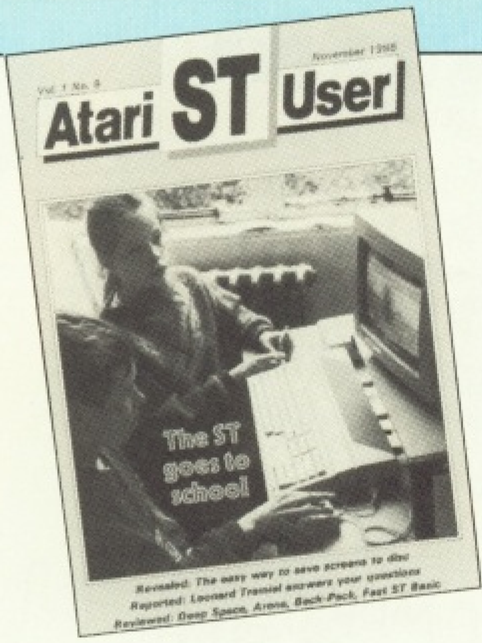
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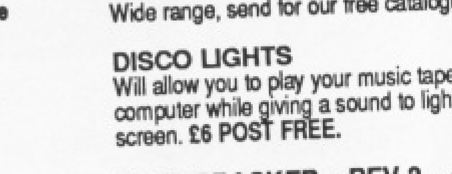
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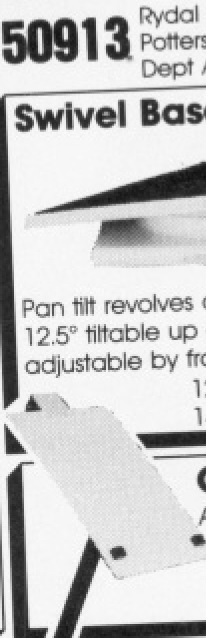
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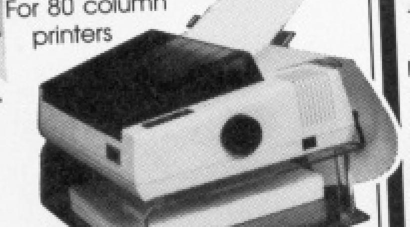
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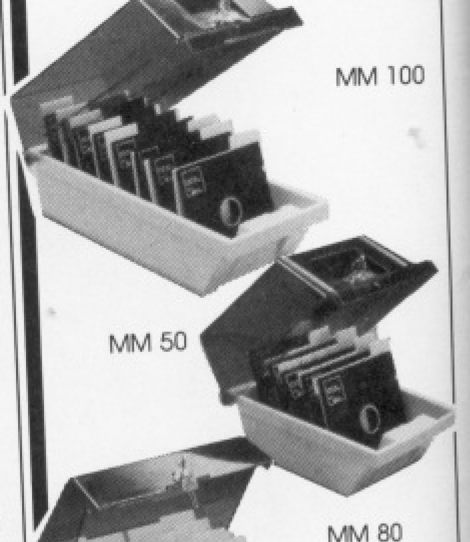
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Euro link set up

ATARI users can now have instant access to Europe's most influential database, thanks to a new permanent electronic link to Luxembourg.

It has been set up by MicroLink in conjunction with the EEC's Directorate General for Information Market and Innovation.

The venture provides a direct link between the main MicroLink computer and that of Euronet/Diane, which is part of a far-reaching project by the European Commission to create a "Common Market of Information".

And it means that MicroLink now has access to more than 600 European databases.

New databases available to MicroLink subscribers through the European link contain information from many sources which are not available through any other online host.

They range from facts on research projects, reports and organisations to an online directory to help find the right hardware and software.

Among the facilities on offer is a multilingual terminology databank of scientific and technical terms containing more than 380,000 words and over 90,000 abbreviations.

It is being updated at the rate of 2,000 new items a month.

The European connection comes only weeks after MicroLink achieved a similar world first – a transatlantic hook-up with the giant American database Mnematics which contains a dynamic section for Atari users.

"Our latest link-up will prove invaluable in opening up new computing and business opportunities in Europe for Atari users", said Derek Meakin, head of MicroLink.

Mac emulator for ST starts rumpus

A PLUG-IN cartridge giving ST users access to some of the most sophisticated software on the market has gone on sale in the US.

West Coast manufacturer Data Pacific is selling the device for $50 – about £35.

When plugged into a 1040ST with monochrome monitor it effectively turns the machine into an Apple Macintosh.

This means the ST can run programs such as Macintosh Plus, MacWrite, MacPaint, MacDraw, PageMaker, LaserWriter, Excel, Lotus Jazz, and the Gem suite of software. As well as providing access to an entire new range of top-flight business software, the device also opens up the possibility of professional standard desktop publishing on the ST range.

The product was first shown in America earlier this year but hurriedly withdrawn when Apple threatened legal action.

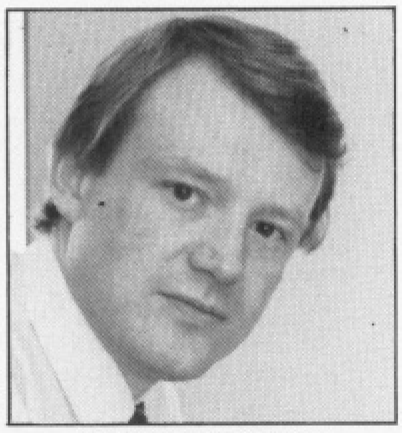
This was because the original design incorporated two Macintosh roms necessary for an effective interface between software and ST.

But Data Pacific has now re-released the device without the roms for sale by mail order. Purchasers have to persuade their local Apple dealers to supply them with the roms from the official Apple spares list.

Apple Computer is said to be dumbfounded by Data Pacfic's decision to go ahead and launch the product – particularly since it enables the ST to run Macintosh programs faster than Apple's computer does.

David Small, the man behind Data Pacific, is unrepentant and insists his product does not infringe any Apple copyright.

But *Atari User* sources in the US say they expect Apple to haul Data Pacific into court in the near future.



OUT: Robert Harding



IN: Bob Gleadow

ALL CHANGE AT ATARI UK

A MAJOR reshuffle has taken place within the executive ranks at Atari UK. Out goes general manager Max Bambridge and sales boss Rob Harding. In comes Bob Gleadow, a former Commodore man, to take over the number one spot.

However, company officials insist that all the changes have been voluntary. And that rumours of a corporate blood bath are without foundation.

"A certain coincidence factor has crept in here", explained an Atari spokeswoman.

"It just so happens that two of our key executives revealed they would be leaving our headquarters in Slough on the same day".

Max Bambridge has been offered the key role of running the Atari operation in the Far East. He has been asked by Jack Tramiel, chairman of the Atari Corporation, to become the supremo of the critical manufacturing side.

As such, his area of responsibility will encompass the company's Taiwan factory which employs 1,500 people.

However, Rob Harding is to sever all connections with the company, opting instead for a new job in the brown goods sector.

Atari UK's new general manager is 37-year-old Bob Gleadow, a former Commodore executive.

Gleadow is a Jack Tramiel appointee, as was Bambridge before him. He was previously general manager of Commodore UK before becoming vice president of Commodore

→

ALL program listings in *Atari User* are now available for free downloading on MicroLink, the UK's fastest growing electronic mail service. They join hundreds of programs already available in the telesoftware section, one of the most popular areas of MicroLink.

PICK YOUR CHRISTMAS PRESENT EARLY AT THE ATARI SHOW

CHRISTMAS will come early this year for those Atari users who go along to the Royal Horticultural Hall in London at the end of this month.

More than 100 stands will be loaded with new products and bargain buys from the leading Atari suppliers.

The spacious 20,000 sq ft exhibition hall will play host to big names like Software Express, Twillstar, CDS, Microdeal and Advanced Systems & Techniques.

This means that the top Westminster location is set to see a repeat of the scenes at the first Atari Computer Show last March which attracted 15,000 visitors.

Once again exhibitors have guaranteed there will be no shortage of new and exciting releases for the entire range of 8 and 16 bit Atari machines.

From recently formed Aaronfay Marketing comes the 300 and 1200 full duplex Trinitas Phasor 2221 modem at a special show price of £345 which includes a choice of software and RS232 cable.

Advanced Systems & Techniques is launching ST titles General Ledger Accounting for £49.95, animating program Make-It-Move for Neochrome and Degas screens priced £39.95, and previewing a new graphics tablet which will cost under £100.

First Software is launching several software titles for the ST together with a range of new books.

Software includes PC Board Designer, a computer aided design program for circuit boards, and Dbase II is on offer for the first time at £119.

The new books are Dbase II Tricks and Tips priced £14.95, Graphics and Sound £12.95, Machine Language £12.95, and Graphic Applications £11.95.

Microdeal is launching its space shuttle flight simulator Shuttle II for the ST at £24.95, and previewing Karate Kid II which is said to have the most magnificent graphics ever devised for the ST.

Also from Microdeal come Trivia Challenge, the popular pub game, and Bulletin Board V2, multitasking software which allows the sysop to carry out work on his board while it is in use.

For 8 bit owners Tynesoft is bringing out Jet Set Willy at £7.95 and Draw Master, an art utility program, at £14.95.

The Atari Christmas Show takes place Friday, Saturday and Sunday, November 28 to 30.

Opening hours are 10am to 6pm Friday and Saturday, 10am to 4pm Sunday.

CAD for circuit boards

AN interactive computer aided design tool which automates the planning and design of printed circuit board layouts has been launched for the 520ST and 1040ST.

Produced by First Publishing in conjunction with Data Becker, PC Board Designer is aimed at small electronic engineering firms, independent electronics engineers and hobbyists.

Its main feature is its automatic routing capability – traces are automatically drawn on the screen or, if required, re-drawn. Price £299.

Trimbase upgraded

AN upgrade of its Trimbase database for the Atari ST has been released by Talent Computer Systems.

Version 1.42 can handle both daisywheel and matrix printers.

It can send a report to a file rather than have it printed directly, allowing Trimbase to be linked to independent word processing equipment.

Other features include the ability to move directly from module to module without dropping into desktop, widening of class names to include lower case letters, and removal of the security procedure expect when defining new record cards or changing existing definitions.

Trimbase Version 1.42 costs £89.95.

Level 9 quits BBC for an ST

AFTER four years of using a BBC Micro to compile the words and pictures for its adventure games, Level 9 Computing has switched over to an Atari ST.

"Our games are now so complex that a program would take several minutes to compile on a BBC", manager Margaret Austin told *Atari User*.

"But on the ST it just takes seconds".

All future Level 9 games will be produced for the ST and enhanced with digitised pictures based on designs by artist Godfrey Dowson.

Level 9 entered the ST games market in September with Jewels of Darkness, a £19.95 compilation of previous releases Colossal Adventure, Adventure Quest and Dungeon Adventure.

The first Level 9 game designed specifically for the ST is Knight Orc which goes on sale in January priced £19.95.



IMAGINE if you can, pool or snooker played in a true 3-D environment and you have a slight idea of what English Software's first release for the Atari ST is about.

But, apart from a requirement to knock coloured balls into holes, Qball bears little resemblance to its traditional table-top forerunners.

For instance, it is played inside a revolving cube and the balls when struck travel through air instead of on a surface.

It adds up to 262,144 possible viewing angles, 2.5 million different directions of shot, and 2.5 million angles of shot.

Despite sounding like a mathematical nightmare, the game for one or two players is described by its publisher as "relaxing and entertaining". Disc price £19.95.

The accent on America

ATARI 8 bit users looking for some American-flavoured entertainment are being offered two new programs by Strategic Simulations.

Gettysburg: The Turning Point is a recreation of the famous battle in the American civil war.

Players can keep track of individual artillery pieces, men and ammunition for each unit. Price: $59.95.

Followers of the American sporting scene can update their major league match-up statistics using the 1985 Baseball Data Disc covering all American League and National League teams. Price: $15.

An event NOT to be missed!

Atari Christmas Show

Royal Horticultural Hall Westminster, London SW1

Friday November 28 10am-6pm
Saturday November 29 10am-6pm
Sunday November 30 10am-4pm



The first ever Atari Show last spring was an outstanding success. From all over Britain Atari enthusiasts flocked to London to find out all they could about their favourite machine.

Soon the record-breaking Atari Show will be back – with three days devoted to the exciting developments in this expanding market. Make a note in your diary NOW to make sure you don't miss this great Christmas extravaganza!

- ★ All the latest software from publishers in both the UK and USA
- ★ New hardware releases from Atari and other major companies
- ★ Experts from Atari User and Atari ST User to answer your questions
- ★ Experience the fascinating world of computer communications
- ★ Everything on show from stocking fillers to complete Atari systems

They'll all be there! Games consoles, 8 bit machines . . . the entire ST range!

Whether you're a new user or a seasoned addict, you'll find the show overflowing with ideas to help you expand your computing horizons!

Avoid the queues!

Get your ticket in advance and. . .

SAVE £1 A HEAD!

Advance ticket order

POST TO: Atari Christmas Show Tickets, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

Please supply:

☐ Adult tickets at £2 (save £1) .... £ ______
☐ Under-16s tickets at £1 (save £1) .... £ ______
TOTAL £ ______

☐ Cheque enclosed made payable to Database Publications Ltd.

☐ Please debit my credit card account:

Access ____ ____ ____ ____

Visa ____ ____ ____ ____

Admission at door:
£3 (adults), £2 (under 16s)

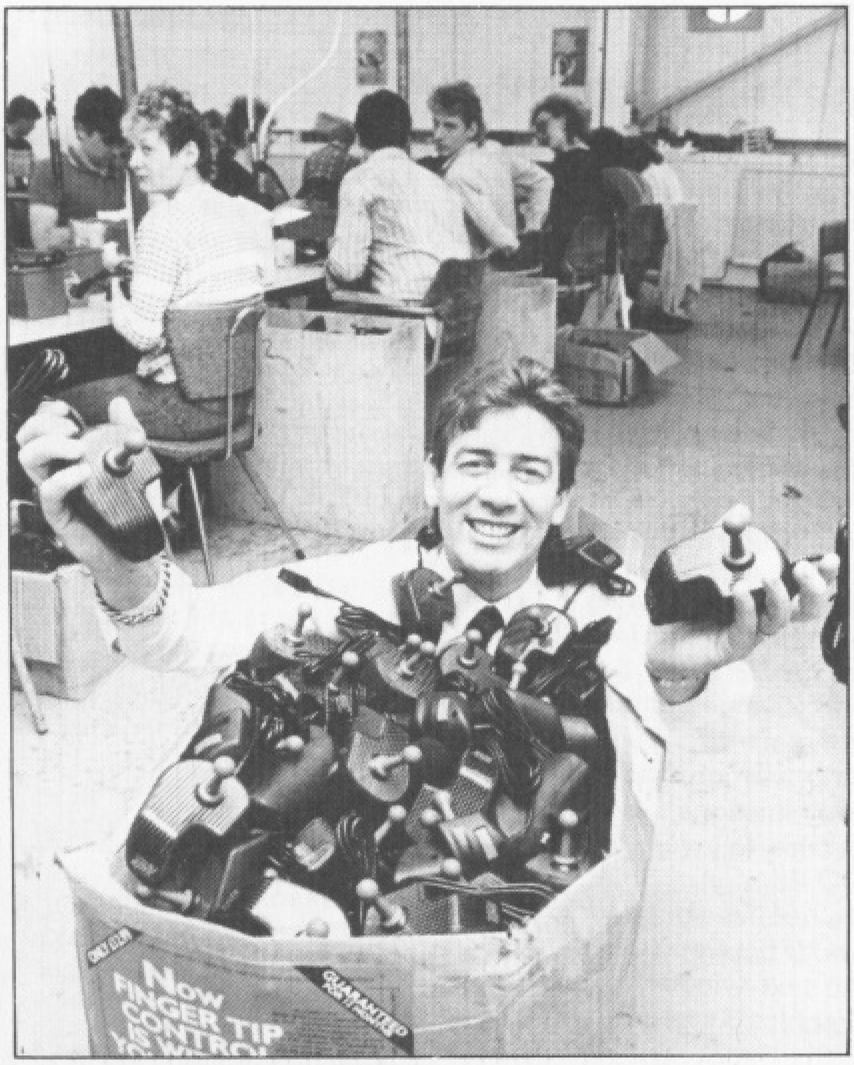
ATARI COMPUTER SHOW

Royal Horticultural Hall, Westminster, London SW1

November 28-30, 1986

Name ....
Address ....
....
.... Signed ....

PHONE ORDERS: Show Hotline: 061-456 8835
PRESTEL ORDERS: KEY *89, THEN 614568383
MICROLINK ORDERS: MAILBOX 72:MAG001
Please quote credit card number and full address + Ref. AT 11



JOY AT KONIX

FOR the first time since it launched its Speed King joystick for the Atari, manufacturer Konix is producing enough units to meet demand.

"Since January, when the product came on to the market, UK orders have outstripped supplies three times over", says managing director Wyn Holloway (pictured above). "In the summer we even had to turn down an order for 60,000 joysticks – and this was despite fulfilling orders in the UK for 100,000 units".

But now the situation has been remedied and production capability has been increased to 50,000 units a week compared with January's 3,500 a week.

"I'd like to thank all our customers for their patience over the last few months", said Holloway.

FROM PAGE 9

International in charge of the company's factories in Hong Kong.

Born in the North of England, Gleadow is married with two children.

One of his first tasks at the helm will be to reorganise Atari UK's marketing department following the departure of Rob Harding.

Atari UK has gone to great pains to point out that the recent changes in no way reflect problems.

"Max Bambridge has moved on after performing the role for which he was appointed – to get the company on its feet here", said an Atari spokeswoman.

"Now Bob Gleadow will take over from there . . ."

Atari bounces back into profitability

FROM being on the verge of collapse less than three years ago, Atari has fought back to profitability.

And now the company is preparing to set the seal on its return to financial stability by offering its shares on the open market.

Atari has registered with the US Securities and Exchange Commission for the sale of 4.5 million shares.

This is expected to raise about $50 million.

Equally important, it will mark Atari's remarkable comeback from near collapse to the status of a public company.

For a positive response to the stock offer from private investors and financial institutions will bestow the ultimate accolade of respectability and acceptance.

And it will be further proof for the previously sceptical computer industry of the ability and leadership of Jack Tramiel and his sons.

The stock offer prospectus says sales of Atari computers and video games are currently worth $200 million a year. And profits for 1986 so far total $12.4 million.

Tramiel and his family will still own half the company if the public takes up the 16 per cent on offer.

And the Tramiels will have cleared off the outstanding $36 million debt left over from their purchase of the firm from Warner Brothers in 1984.

A leading American financial observer told *Atari User:* "Atari's debut as a public company will unveil its full financial standing and market strategies for the first time.

"At last we'll get a chance to look at what they've got and what they've really done".

Michael Murphy, editor of a leading stocks and shares publication said: "This latest development in the Atari saga caps an amazing story – I think Jack Tramiel has pulled it off"

ST Editing package

AN editing package for creating and maintaining AES resource files on Atari ST computers has been released by Kuma Software.

Called K-Resource, it is implemented to make full use of Gem features and includes a built-in full function icon/image editor.

There are options for auto snap which aligns objects in character sized grid, auto size in which string/text object sizes are automatically calculated, and compatibility which helps create files that work on colour and monochrome monitors.

K-Resource operates in both high and medium resolution and will produce output files for inclusion in C, Pascal, Modula 2 and Fortran 77 programs, enabling symbolic reference to resource objects. The package is also compatible with most other resource editors.

Resource files can be copied, renamed and deleted without leaving the program. All tree and object types are supported, including menus, free strings, free images and alerts. Price £39.95.

Starquake for 8 bits

ARCADE adventure Starquake – a chart-topping hit in its versions for other micros – has become the first Atari 8 bit release ever from Bubble Bus Software.

Starquake is set on the edge of the galaxy where a highly unstable satellite has been emerging from a black hole.

Blob, a biologically operated being, is chosen for a mission to stabilise the planet by rebuilding its core.

The Atari version has more than 450 different locations featuring anti-gravity lifts, teleport systems, planet surface, security doors, sub-planet exploration, propulsion pads, and planetary beings.

Starquake costs £8.95 on tape, £12.95 on disc.

More £25 winners!

Send your five-liners in to us at: Five-Liners, Atari User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

KEYBOARD BUFFER
from ADRIAN COX

HAVE you ever wished you could type the next command line into your Atari while it is busy doing something else – such as loading or saving a program? Well with this great little five-liner, you can do just that.

Type the program in, and save a copy before running it because after installing the machine code routine in Page 6 the Basic segment will delete itself. The routine can be turned off by pressing System Reset, and turned back on again by typing A=USR(1536). Disc drive owners can use the SETUP.COM file with Dos 2.5 to make the program automatically run on power-up.

Once the machine code is installed, anything that is typed in while the computer is not accepting input – such as during disc operations – is stored in a buffer and produced when the computer is ready for it. The workings of the routine are too complex to go into here, but the basic method used is to replace the rom keyboard interrupt handler with a revised version which stores each keypress into a 112 character buffer.

A vertical blank routine pulls the characters back every fiftieth of a second as fast as the computer can cope with them.

```
10 DATA 104,169,21,141,0,2,169,6,141,9
,2,162,6,160,103,169,6,32,92,228,96,17
3,9,210,205,242,2,208,5,173,241,2,208
20 DATA 62,173,9,210,201,159,208,10,17
3,255,2,73,255,141,255,2,176,45,141,24
2,2,138,72,173,9,210,174,143,6,236,142
30 DATA 6,240,29,157,144,6,238,143,6,1
73,143,6,201,112,208,5,169,0,141,143,6
,104,170,169,3,141,241,2,169,0,133,77
40 DATA 169,48,141,43,2,104,64,173,252
,2,201,255,208,24,174,142,6,232,224,11
2,208,2,162,0,236,143,6,240,9,189,144
50 FOR A=1536 TO 1679:READ B:POKE A,B:
NEXT A:A=USR(1536):NEW :DATA 6,141,252
,2,142,142,6,76,95,228,0,0,0,0,0,10,11
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	16556	20	16631	30	16349
40	16577	50	18354		

GRAPHICS 8 INVERTER
from KEVIN JOHNSTON

THIS solves a problem that a number of people have been writing in to Mailbag about – that of reversing a Graphics 8 screen for dumping to a printer.

Not only can it reverse – or invert – the whole screen, but also portions of it. In order to demonstrate its use we have printed some extra lines which print a pattern on the screen and then invert portions of it. That's why we've listed a five-liner with more than five lines!

The first five lines are the routine itself. To use it, simply set the four control values and then GOSUB 1 or GOTO 1. The *X* and *Y* values tell the routine where to start the invert operation (with *X* in character positions, not pixel positions). *W* is the width of the section to invert, and *D* the depth.

X and *W* may have values between 0 and 39, and *Y* and *D* between 0 and 191 (assuming no text window). To invert a normal Graphics 8 screen you would use *X=0, Y=0, W=39, D=159.*

You can achieve special effects during the conversion by changing the value 255 in line 2 – any value between 0 and 255 is acceptable.

```
1 GRAPHICS 24:FOR L=1 TO 35:READ DA:PO
KE 1535+L,DA:NEXT L:GOTO 100
2 DATA 104,162,0,165,208,24,105,40,133
,208,165,209,105,00,133,209,232,160,00
,177,208,73,255,145,208,200
3 DATA 196,206,208,245,228,207,208,225
,96
4 SC=PEEK(88)+256*PEEK(89):SC2=SC+(Y*4
0+X):HI=INT(SC2/256):LO=SC2-(HI*256)
5 POKE 208,LO:POKE 209,HI:POKE 206,W:P
OKE 207,D:Z=USR(1536)
9 RETURN
100 REM DEMO SECTION...
110 COLOR 1:FOR A=0 TO 319 STEP 3:PLOT
 A,0:DRAWTO 319-A,191:NEXT A
120 X=INT(RND(0)*30)
130 Y=INT(RND(0)*160)
140 W=INT(RND(0)*(38-X))+1
150 D=INT(RND(0)*(190-Y))+1
160 GOSUB 4
170 GOTO 120
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
1	11970	2	15142	3	6272
4	12951	5	10476	9	1498
100	3694	110	11605	120	2947
130	3082	140	3889	150	4102
160	1454	170	1614		

COLOUR QUEST from DONALD ASHTON

THIS plays a game somewhat similar to the Simon electronic toy which you can buy in the shops. It is a memory test: You try to remember and repeat a sequence of randomly chosen colours.

The computer will display a short sequence to start with, and you have to echo it – typing R for red, G for green, B for blue and Y for yellow. If you're successful a longer sequence is played, and you have to keep going as long as possible. When you finally get an answer wrong you will be given the correct sequence and your score. The high-score will be maintained for you between games.

A$* controls the colours POKEd into location 710, the Ascii values of the characters being the colour register values. *C$ contains the random colour sequence used. Locations 204 and 205 are free addresses which are used to keep track of the current score and high score values. If you're something of a memory genius then the game's difficulty can be altered by changing the delay value used in the *X* loop in line 30.

```
10 POKE 752,1:FOR X=1 TO 300:NEXT X:?
CHR$(125):DIM A$(4),B$(4),C$(30),A(30)
:A$="#◆B└":B$="RBGY":A=PEEK(204)
20 C=PEEK(205):FOR D=1 TO C+3:E=INT(4*
RND(0)+1):C$(D,D)=B$(E,E):A(D)=ASC(A$(
E,E)):NEXT D:FOR D=1 TO C+3
30 POKE 710,A(D):FOR X=1 TO 500:NEXT X
:POKE 710,0:FOR Z=1 TO 100:NEXT Z:NEXT
 D:OPEN #1,4,0,"K:":? "ENTER NOW: ";
40 FOR D=1 TO C+3:GET #1,K:? CHR$(K);:
IF CHR$(K)=C$(D,D) THEN NEXT D:POKE 20
5,C+1:? CHR$(253):RUN
50 POP :? "=Wrong!!":? :? "
RIGHT=";C$:? :? :? "   SCORE=";C,"HI="
;A:POKE 205,0:IF C>A THEN POKE 204,C
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	17766	20	17504	30	19896
40	16740	50	22729		

DATA CREATOR from JEFF DAVIS

THIS useful routine will read a predetermined number of memory locations and force-write their values into DATA statements.

To give you an idea as to the efficiency of the program, the whole of Page 6 will be converted to DATA in under 15 seconds. 5000 memory locations can be handled in under 4 minutes – considerably faster than typing them in by hand! This will appeal primarily to assembler programmers wishing to write machine code routines to be accessed from Basic. After assembling the object code can be saved to disc using the DOS K option. Afterwards re-boot Dos with Basic present and use the L option to load the object code back into memory. Finally, run the Data Creator to place your code into DATA statements for your Basic programs.

The program works by firstly requesting you to enter the starting line number, which should be greater than five to avoid overwriting. Next you enter the start and end addresses of the machine code program you want converting. The routine then PEEKs the memory locations within that range, eight at a time, and arranges them into DATA lines prefixed with a line number. The ever popular Return Key Mode is used to enter each line straight into the Basic program as it runs.

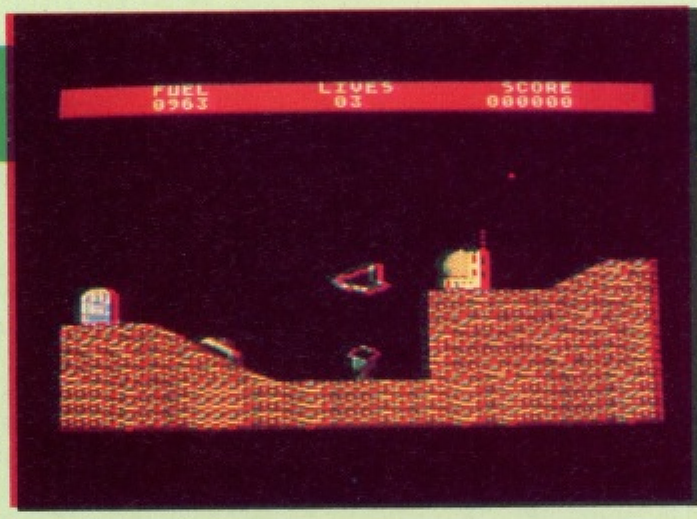
Since the program creates eight values per line, the final line may contain a few extra numbers that were not required. These may be ignored or removed depending on your preference. Once the routine has finished, delete lines one to five and SAVE or LIST it to tape or disc.

```
1 GRAPHICS 0:? "ENTER START LINE";:INP
UT L:? "ENTER START ADDRESS";:INPUT ME
MLOC:? "ENTER END ADDRESS";:INPUT MEND
2 GRAPHICS 0:POSITION 2,4:? L;" DATA "
;:L=L+10:FOR Z=0 TO 7:? PEEK(MEMLOC);:
IF Z<7 THEN ? ",";
3 MEMLOC=MEMLOC+1:NEXT Z:? :? "CONT":P
OSITION 2,0:POKE 842,13:STOP :POKE 842
,12
4 IF MEMLOC>MEND THEN ? CHR$(125):POKE
 842,12:LIST :? :? :? "Your Data State
ments are Completed....":END
5 GOTO 2
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
1	22287	2	17080	3	14665
4	21735	5	1274		

Pod power



Program: Thrust
Price: £1.99
Supplier: Firebird, Wellington House, Upper St Martin's Lane, London, WC2H 9DL.
Tel: 01-379 6755

THRUST is a little like a combination of the Lunar Lander and Asteroids games of old. You control a triangular shaped craft which can be rotated clockwise and anti-clockwise and thrust forward by firing its rockets.

Controlling the craft from the keyboard is tricky at first – you have to know just when to fire the rockets to overcome inertia – but it soon becomes easier with practice.

The idea is to steal Klystron pods which can be captured with a tractor beam. To do this you must position the ship just above a pod, hover, activate the tractor beam (by pressing the Option key) and then thrust away with the pod in tow.

The programmer must have a degree in physics because the pod hangs beneath the ship like a pendulum and swings realistically from side to side as you manoeuvre the craft through the tortuous tunnels.

Should the swing become uncontrollable you will surely be dragged into a cavern wall.

You defend yourself against enemy fire by shooting at and disabling their power plant, using your shields for extra protection.

Fuel can be taken aboard using the tractor beam, and bonus points can be gained by both capturing a pod and sending the power plant's reactor into a critical phase.

Success at the first level leads you into more dangerous zones where you may encounter reverse gravity or worse.

Thrust was first released on the Commodore 64, and shot immediately to number one in the charts.

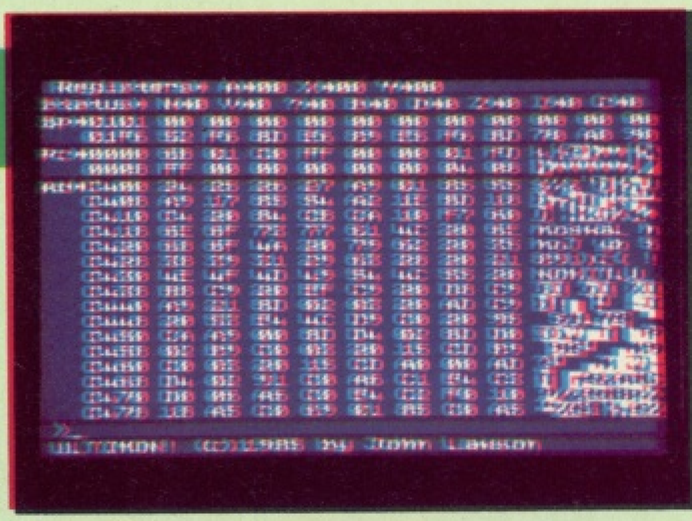
However the Atari version is a disappointment. The graphics are fairly crude, the sound is only average and there is no joystick option.

Despite that, the game does offer a good challenge and has a certain addictive quality.

Bob Chappell

Sound	6
Graphics	6
Playability	7
Value for money	8
Overall	7

Programming aids



Products: XOS/80 Column chip (£29.95)
XOS/Ultimon chip (£49.95)
Tripler board (£22.95)
Supplier: Computer Support, 26 Seacourt Road, Abbey Wood, London SE2 9UW.
Tel: 01-311 7339

IN the States you can buy almost any sort of hardware or software add-ons you require for your 8 bit Atari, but there has long been a lack of such support in the UK.

Now London based company Computer Support can fill that gap. XOS is its modified operating system, and forms the basis of many of its products.

It will allow most old 400/800 programs to run correctly on an XL or XE because it basically converts the new OS back into a reasonable facsimile of the older version and uses the extra 4k now available to good effect.

It includes a whole host of extra features such as 820 baud cassette saves and holding the bank select status upon reset.

Most of its features are simply window dressing, but it really comes into its own when linked with other programs – such as the 80 column version and Ultimon.

The 80 column XOS chip allows you to select 80 column mode simply by holding down the Select key on power-up.

The 80 column display is based on a Graphics 8 screen in black and white and is reasonably readable on a cheap monitor. On a TV, though, you could end up with eye strain.

But be warned – the 80 column mode may not work with your particular word processor or database.

Ultimon is another option available with XOS and it provides a permanently resident machine code monitor. This can be called from Basic, or by holding down Select and pressing the Reset key. The display shows you the current status of the processor, plus the contents of the current program counter and a section of memory.

It has the facility to view, disassemble and alter memory, load and save given disc sectors and run programs.

There is no breakpoint facility, but there is a very limited single step mode. This should be very useful to the machine code programmer who wants to check and modify his code before running it.

The 130XE version uses the extra banks to avoid corrupting the main screen display and zero page locations, which is a major failing of the older versions.

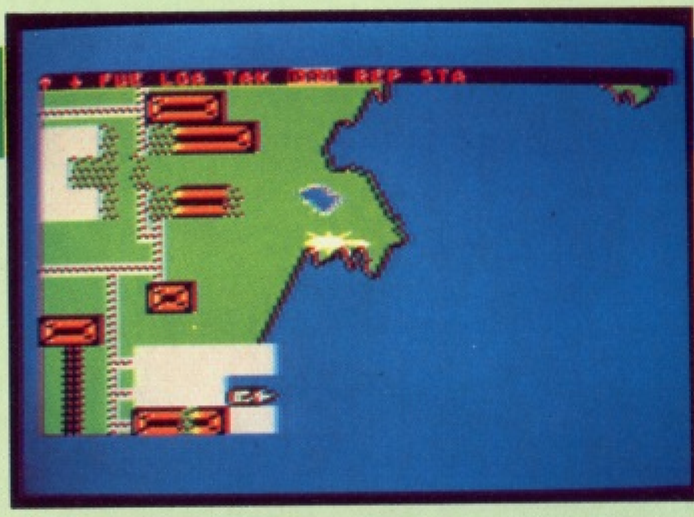
You could consider using the Computer Support tripler board to allow you to put both the original OS and two new chips into your machine and switch them in and out as required.

This is very useful when you bear in mind that some games will not run at all with an XOS chip in place.

These chips are of limited appeal to the straightforward games player, but if you are a programming enthusiast they could be right up your street – if a little on the expensive side.

André Willey

Running repairs



Program: War-Copter
Price: £7.95 (cassette), £9.95 (disc)
Supplier: Red Rat, Fennel Street, Manchester, M4 3DU.
Tel: 061-835 1055

TWO nations separated by sea are in conflict. One decides to attack, sending out warships and missiles against the other.

You are the defender of the attacked nation. Flying a helicopter, you must seek out the enemy ships and destroy them before they zap you.

The view is from above with the land and sea stretching and scrolling over several screens. Your copter has some ammunition but to get more you must visit a factory on the far side of the island.

The ammunition is produced from raw materials gained from the wreckage of enemy ships. You destroy ships to get ammunition so you can go out and destroy more ships, and so on.

To gather the raw material you land your chopper on a sinking ship and ferry the wreckage to the factory.

The more debris you carry the more fuel you use up. Further supplies of fuel can be obtained by landing on either of two fuel dumps, though they may be damaged by enemy fire.

Repairs to the dumps and your war-copter can be made by calling for aid from Repair Control which may in turn be damaged but can even repair itself. All very circular isn't it!

Repairs are made at a speed commensurate with the amount of damage. If Repair Control is destroyed, the game is over.

The scrolling of the scenery as your copter flies around is efficiently done.

Moving the joystick left or right rotates the copter while pushing forward sends it on its way. Pulling back launches a missile and hitting the button fires bullets.

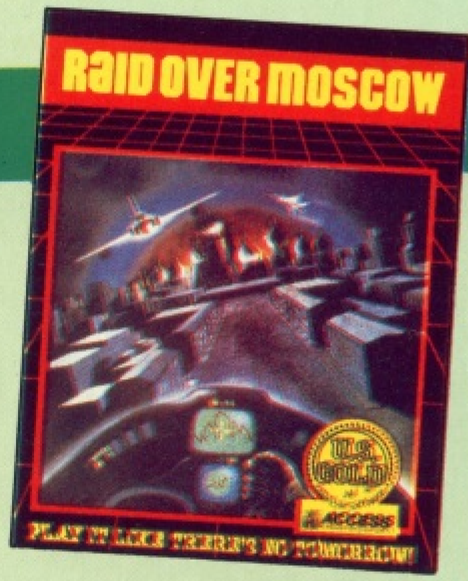
A command bar at the top of the screen is activated by pressing the Select and Start keys. This bar lets you land, take off, display fuel and load carried, call the repair ship, drop debris and pick up ammo from the factory.

Graphics and sound are fairly simple and, although there are one or two new elements, the game is hardly original. Even so, it's a reasonable enough attempt.

Bob Chappell

Sound	7
Graphics	7
Playability	7
Value for money	6
Overall	7

Pre-emptive strike



Program: Raid Over Moscow
Price: £9.95
Supplier: US Gold, Unit 2-3, Holford Way, Holford, Birmingham, B6 7AX.
Tel: 021-356 3388

LIKE the successful Beach-Head programs, Raid Over Moscow is a multi-scenario game. One of the good things about it is that the entire game sits in memory – none of that painful multi-loading needed here.

Another welcome feature is the demo. This not only lets you see parts of the game you might otherwise never get to, but also allows you to play out any of those scenes simply by taking over control during the demo.

As a squadron commander of the US defence space station, it is your task to stop a nuclear attack by knocking out Russian launch sites and then leading an assault on the Soviet Defence Centre in Moscow.

Not exactly in the best posssible taste, would you say? Best forget the blurb and just enjoy the game as an arcade shoot-em-up.

Game 1 is probably the toughest. You must fly as many vertical-takeoff fighter planes out of the station hangar as possible.

Due to the plane's semi-weightlessness and having to control three thrusters as well as open the hangar doors, this part is far from a doddle.

In game 2, you fly your craft at low level from left to right across the screen. You must shoot enemy craft and missiles and avoid being shot down yourself.

You're among the missile silos in game 3. Here you're facing forwards and must knock out the four silos by launching rockets through their window slits.

Game 4 sets you in Moscow, hiding in a trench facing the defence centre. Armed with a rocket launcher – a silent one, to boot! – you must hit the towers of the building and the soldiers who are taking pot shots at you from behind two walls.

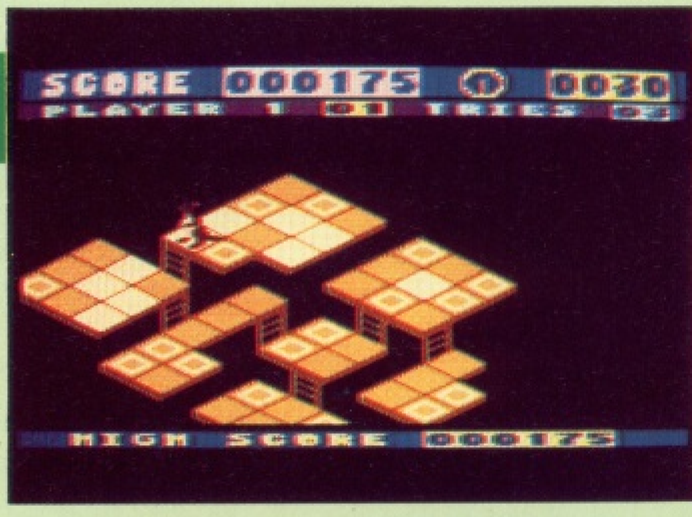
The final game places you inside the reactor room where you hurl disc grenades at a moving maintenance robot. (I told you to forget the silly plot!)

The graphics and sound are not particularly exciting but with three skill levels and five different shoot-em-up games, you certainly get a decent run for your money.

Douglas Wooller

Sound	7
Graphics	7
Playability	8
Value for money	8
Overall	8

Three in one



Program: Greatest Hits Volume 1
Price: £9.95 (cassette) £11.95 (disc)
Supplier: Databyte, Suite 31A Grove Terrace, Highgate Road, London, NW5 1PL.
Tel: 01-482 1755

THIS is probably one of the best collections released. True, there are only three games – Astro Chase, Bristles and Flip and Flop – but there's not a dud among them.

Astro Chase is a good old fashioned space shoot-em-up, using graphics and sound to great effect. Up aloft and chasing round the planets in a flying saucer you destroy mines that are closing in on mother Earth.

Distracting you from this mission of mercy are a fleet of attack fighters. There are 34 levels to progress through and you can start on any one you like.

Your weaponry fires in eight different directions and you can hoist shields for short periods for added protection. Bonus saucers are gained as you proceed through the game.

Should you lose all your saucers, the mission terminates with the spectacular explosion of Earth.

The smooth scrolling action, multi-levels, music and other sound effects all add up to a classic game.

Flip and Flop is a sort of Q-Bert with a difference. The idea is to guide a kangaroo and a monkey over a series of tiles suspended in mid-air.

Many tiles are marked in a special way and all of these must be touched – they then change colour – before the clock runs out.

When the kangaroo is on, it hops above the tiles. When it's the monkey's turn, it swings underneath the tiles – and that is really disorientating.

Apart from falling off, other hazards include sticky tiles and a pursuing zoo keeper. There are 36 levels.

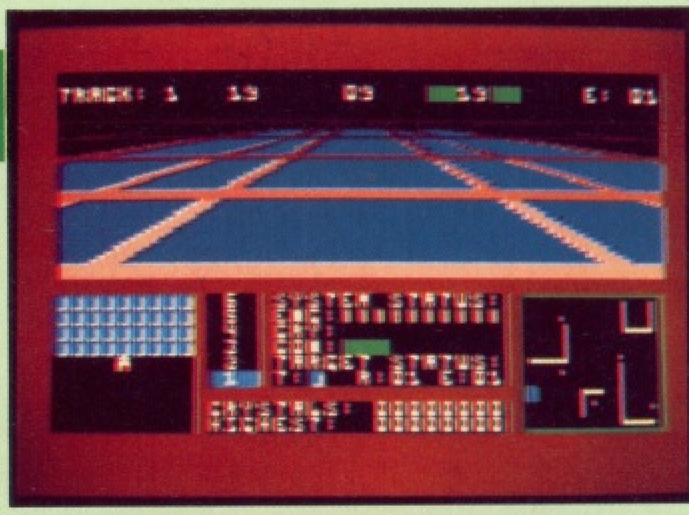
Finally, *Bristles* is a game for up to four players in which you endeavour to paint all the rooms in eight buildings. Six skill levels are available.

A time limit, elevators, ladders, brushes, rollers, flying buckets, dumb buckets, safe rooms, Brenda the Brat, the Bucket Chucker and steam pipes are just some of the elements in this fast moving game.

Overall, an excellent compendium in which each game offers a wealth of entertainment. Every player should have this in his or her collection. **Bob Chappell**

Sound	8
Graphics	8
Playability	9
Value for money	9
Overall	9

Fast and furious



Program: Sun Star
Price: £9.95 (cassette) £14.95 (disc)
Supplier: CRL, 9 Kings Yard, Carpenter's Road, London E15 2HD.
Tel: 01-533 2918

GAMES that are able to convey the impression of high speed can certainly quicken the pulses of even the most jaded player. And Sun Star can certainly shift.

Sun Star is your space vehicle, the screen your cockpit. But you won't be flying through outer space – no twinkling stars and flashing meteorites in this one.

Instead, you skim over the surface of a massive grid, moving as slowly or as fast as you like.

The main part of the screen is taken up with your forward view. Long and short range scanners at the sides assist navigation.

The idea is to zoom around the grid trying to avoid thumping into the blue grid walls, yellow obstruction pulses and red energy pulses. Contact with any of them puts a drain on your limited energy.

You are looking for white disrupter pulses. Repeated firing at one causes it to get browned off and move elsewhere on the grid, leaving behind a moving green energy crystal. You have to pass above this to grab it before it disappears.

Having collected 10 greenies, you head for a revolving warp gate and blast a laser bolt into the orange hyperwarp cell in order to warp to the next grid. The plot is no dafter than most and a good excuse for doing lots of zapping and zooming around.

Movement is really fast when you let the throttle out on your machine and the feeling of motion is quite exhilarating.

The graphics are pretty basic – all you have here, when you get down to it, are loads of squares, some with different colours. But fancy graphics don't always make the best arcade games.

The qualities of Sun Star lie in the chase against time theme, the high speed and the furious but atmospheric sound effects. Fast, noisy and simple – that'll do for me.

Douglas Wooller

Sound	8
Graphics	7
Playability	9
Value for money	8
Overall	8

ATARI computers have always been renowned for their spectacular graphics capabilities, and there has been a never ending stream of art and design programs for the 8 bit range.

The most commonly used ones include the Touch Tablet, GAD and the old faithfuls Micropainter and Paint.

All have their relative merits, but also a common failing – if you can't draw you are stuck. There was no simple way to transfer a photograph or other form of picture to the computer.

Now Digital Vision has come up with a solution with its Computereyes video digitiser. It will convert any picture from a video camera or a recorder into a form the computer can store and display.

There are two main types of digitiser – colour and monochrome – and Computereyes falls into the latter category. Although the pictures are only mono some very good results can be obtained.

The video way to Atari graphics

Fingers all thumbs? André Willey finds the answer for those who cannot draw well.

The package consists of a small black box which plugs into the first and second joystick ports, a disc containing the software and a small manual.

Plug the lead from your video recorder or camera into the black box via a phono socket, and you are ready to go.

After booting the disc you are confronted with a multitude of options on the main menu.

First you adjust the sync control by selecting the first option and turning the knob until the screen lets you know the picture is in sync.

The manual then tells you to adjust the brightness. I found that this should be set to different positions for the different types of capture, but more of that later.

Once set up you can start to digitise your own pictures.

The modes available each took a different length of time to complete the process, possibly because the unit does a complete scan of the picture for each grey level required.

The more grey levels you want, the longer it takes.

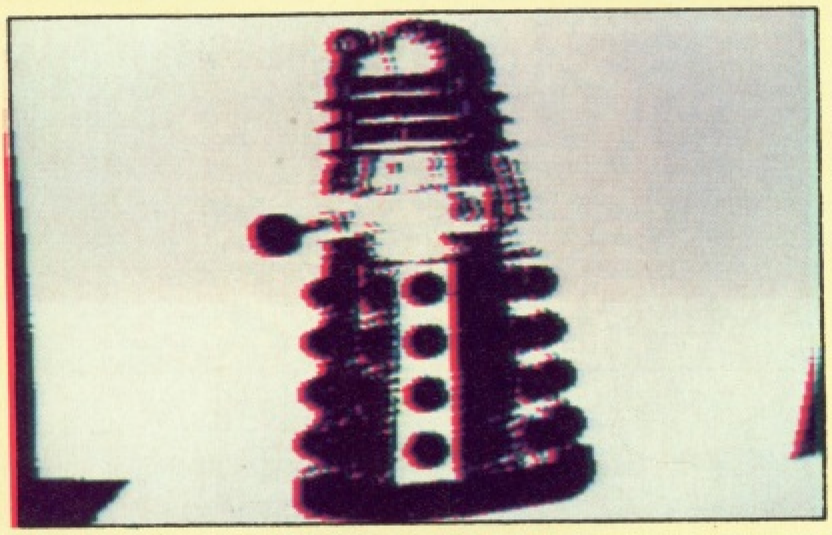
Normal capture is the quickest at six seconds, and this gives you a Graphics 8 screen with a high contrast image of dark and light pixels.

There are two other Graphics 8 modes – four level and eight level – which take about 25 and 50 seconds respectively and give a shaded texture to the picture.

The Atari high resolution







The pictures above were digitised with a Canon VC30 video camera. Two from black and white photographs in Graphics 9, and the Dalek in Normal Mode from a 12in model kit.



Graphics 8: Normal Mode





Digitised with the equipment shown on the cover

colour modes have not been forgotten, with options for both a high and low contrast capture on to a Graphics 15 screen.

They use the four colours available as black, white and two grey tones, and take about 18 seconds to complete.

These screens are compatible with the Micropainter format, so you can enhance them later with the Touch Tablet or any similar package.

The final mode allows you to capture a full Graphics 9 image, with 15 grey levels, but at the expense of horizontal resolution.

This mode took more than a minute and a half to complete, but was usually worth the wait.

The other menu options allow you to load and save pictures and obtain a disc directory.

A nice feature was the inclusion of help screens for every option, which could prove very useful to the beginner.

The disc also has a number of demonstration pictures for each of the modes – some of which we've printed to allow you to compare the same image digitised in different ways.

I found the best results were most often achieved by using the Graphics 9 capture, but a little experimentation could yield good results in most modes.

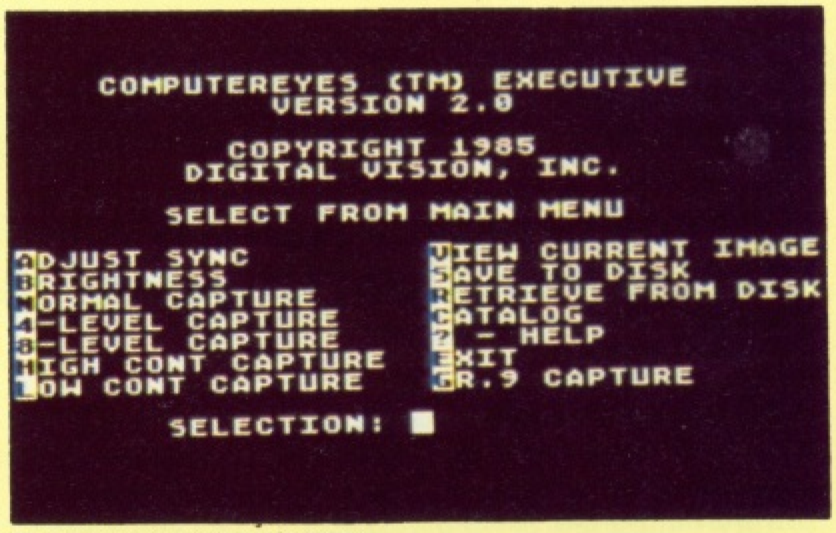
The brightness requirements seemed a little odd – for the same video image, the more grey levels required, the darker the brightness control needed to be.

This was a little annoying when trying to find which mode worked best with which images.

The results were fine when using a video camera on a tripod, but most video recorders do not produce a good enough freeze-frame to allow you to capture a good image from tape.

This was most noticeable in the Graphics 9 mode because this takes longer to complete.

Computereyes performed well, and presented some very passable results as you'll see from the illustrations. If you want to get seriously into graphics on your 8 bit Atari you should take a good look at this product.



The Computereyes main menu

Product: Computereyes
Price: £119 (disc only)
Supplier: Stem Computing, 3 Blackness Avenue, Dundee, DD2 1ER.
Tel: 0382 65113



Graphics 8: 8 Level Mode

Graphics 15: High Contrast

Graphics 9

Here's the key to programming musical games



Part 6 of LEN GOLDING's series on using your Atari to control devices

THIS month's project is a simple keyboard which can be used for playing live music – or as a programming aid to help you add music to your Basic games or educational programs. It has a two-octave range (E to E) which is adequate for most popular tunes – and it's very easy to build.

We've opted for a stylus system, which means you can play only one note at a time but this keeps the cost down and simplifies construction and programming.

A diode matrix decodes the signal from each key into a five-bit binary word which is sent to pins 1, 2, 3, 4 and 6 of the joystick port. Last month's project explained the technique in some detail, so we won't go into it again.

A short driver program converts the five bits into a decimal number between 0 and 25, which can then be used in any music program you care to write.

Figure I shows the printed circuit board pattern, reduced in size so that it will fit on to the magazine page. Its actual dimensions are 230mm × 85mm, so you'll need to enlarge it if you want to make your own PCB. Alternatively you can buy the professionally produced version from RHG design.

Construction could hardly be simpler. Figure II shows the board layout – make sure all the diodes are soldered with their black or coloured bands towards the keys. A bending jig – see Figure III – will save time and ensure that the diodes all slot neatly into place.

Although type 1N914 is specified, almost any silicon signal diode will

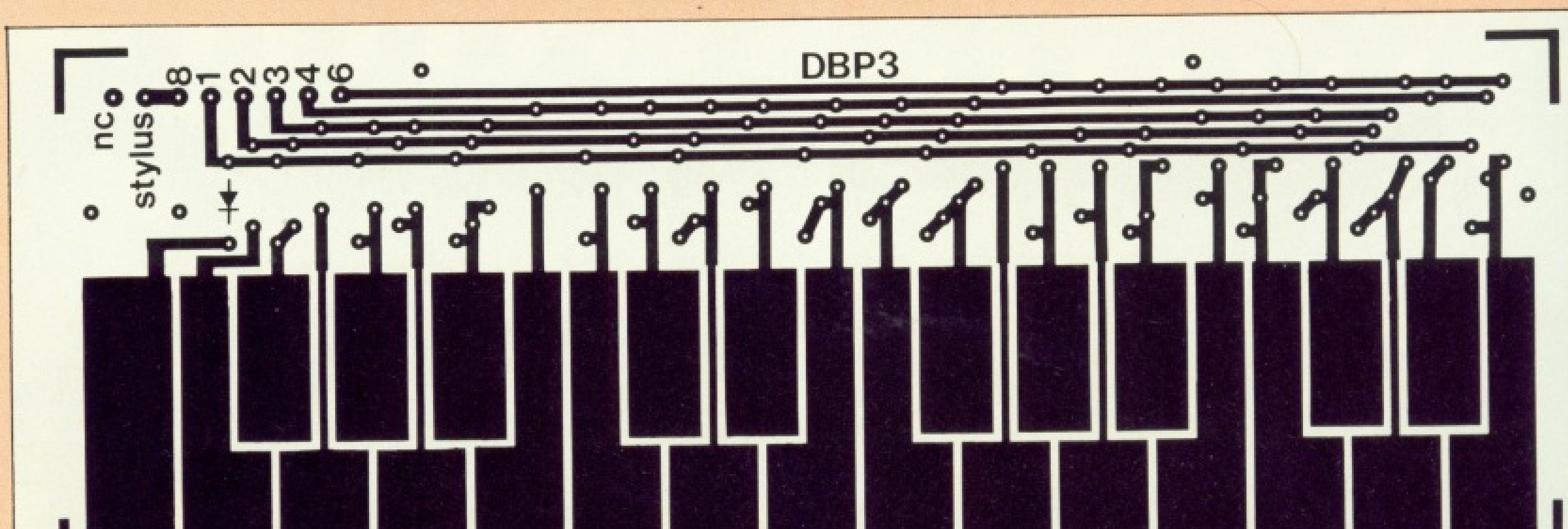
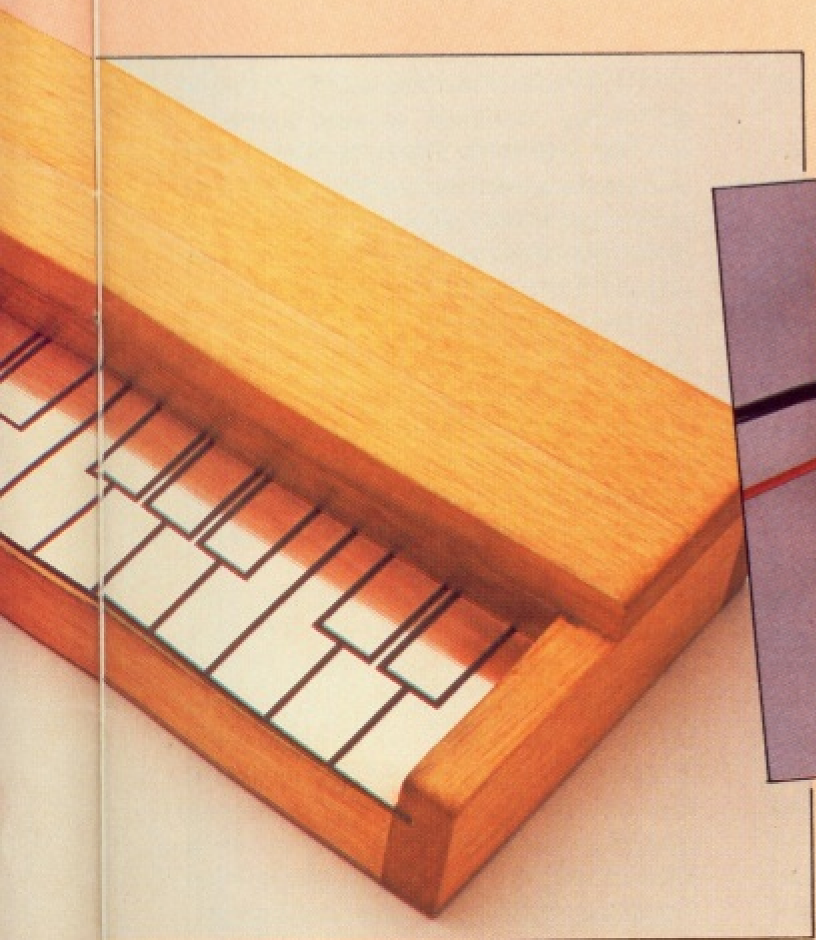
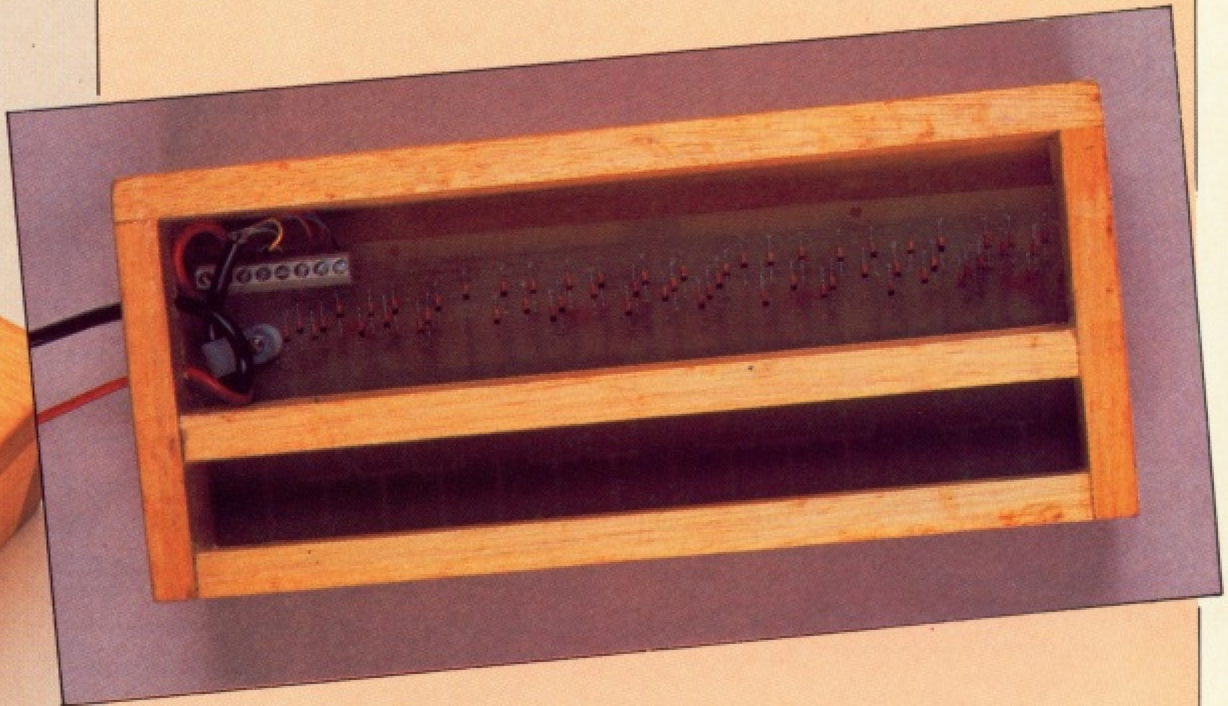


Figure I: PCB foil pattern





work and you may be able to pick up a job lot fairly cheaply – Tandy stores sell a pack of 50 for about £2.50.

The stylus is made from a standard test probe and is connected by a flexible lead to the point marked *stylus* on the PCB. The terminal marked *NC* is not connected to anything.

When everything is soldered together, fit the joystick lead and stylus using a cable clamp or P clip to take the strain. Plug the gadget into Port 1 and run Program I. You should see a zero displayed on the screen. Touch the stylus to the lower 'E' pad at the left-hand side of the keyboard and the number should change to one. The next key (F) should produce two, and so on up to the top E, which should return 25.

If any are at fault, make sure that all the diodes connected to the offending key are wired the right way round. Also check that the solder has correctly joined each component lead to its intended track, and that no blobs of solder have bridged the gaps between tracks.

Mounting the PCB in a case requires a bit of care. The keys must be supported along their length, and you'll want to hide the solder blobs somehow. The prototype case was made entirely from a 6ft length of 25mm × 9mm planed Ramin. This size can often be found among the hardwood mouldings and beadings in large DIY stores.

Programming is straightforward. Four of the five bits are returned at address 632, while the fifth appears at address 644. Our software must

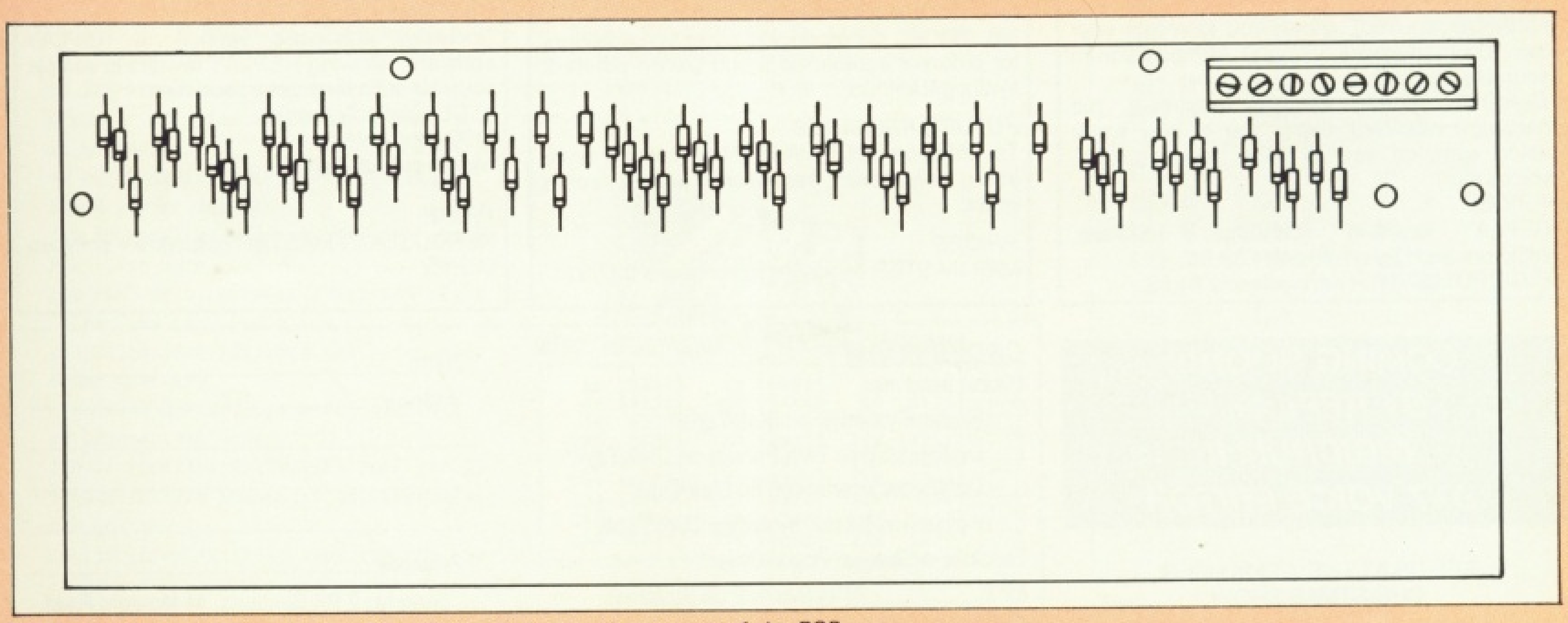


Figure II: Layout showing the position of the diodes on the reverse of the PCB

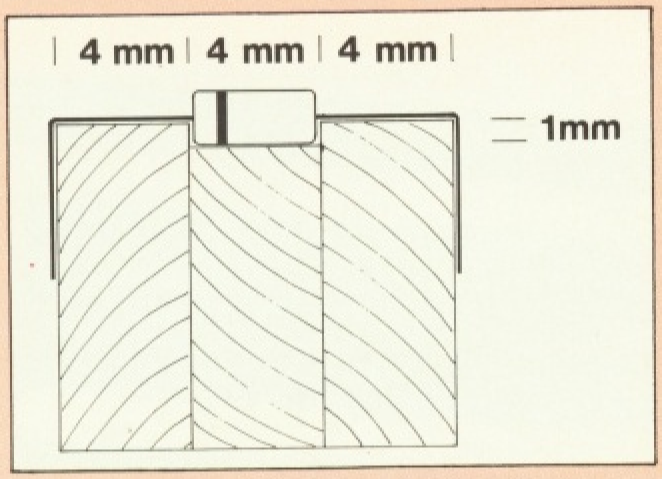


Figure III: The bending jig

combine these into a single five-bit word, and store the result as a decimal number from 0 to 25. This can be accomplished by Program I, but it's more elegant and faster to use a short machine code routine.

Program II shows one way of doing this. Lines 10 to 40 contain a machine code routine (Program IV gives the source listing) which decodes the keyboard's output fifty times a second during the vertical blanking interval. The result is stored in address 1791, and can range from 0 (no key pressed) to 25 (top E). Lines 50 to 70 set up a matrix P which contains all the pitch values in ascending order.

Line 80 generates the sound, using the number held in 1791 as an index into the matrix to retrieve the appropriate pitch value. For example, key 6 will select matrix entry number 6 and this value (144), used in a SOUND statement, produces the note A.

The program also resets address 77 to 0 every time a key is touched. This prevents the screen colour rotation which would otherwise occur after about ten minutes.

Program III shows one way of recording and playing back your tunes. Add these lines to Program II, deleting the existing line 80. This program waits for your first note, then stores its pitch and duration in two matrices named *PITCH* and *TIME* respectively.

Duration is calculated by using the real-time clock at address 20. This address increments automatically every fiftieth of a second, so it's easy to time an event by checking the before and after values. In Program III the counter is set to 0 whenever you touch a note, and read again when you move the stylus. The count value at that moment is stored in matrix *TIME* and indicates the note's

duration in fiftieths of a second.

When you've finished your live performance, press any key on the console keyboard – the spacebar is convenient – and you can then ask for an action replay, or start another tune.

The replay option lets you increase or decrease the playback speed by up to ten times – a tempo of 1 gives roughly the same speed as the live performance. 2 is twice as fast, 0.5 is half as fast, and so on. Try picking out the Flight of the Bumble Bee at dirge speed then playing it back at warp factor ten . . .

Replay is a simple reversal of the recording process. Pitch and duration values are read from their respective matrices, then *PITCH* is used directly in a *SOUND* statement (line 200) and *TIME* is used in conjunction with the tempo value to control a delay loop at line 210.

● *That's all for this time. Next month we'll describe a four-channel, low voltage model motor controller.*

The parts for the keyboard are available from Maplin Electronic Supplies, PO Box 3, Rayleigh, Essex SS6 8LR. Tel: 0702 552911.

A joystick extension lead is available from Tandy stores (code 276-1978) or from large computer shops.

The printed circuit board (order code DBP3) is available from: R.H. Design, 137 Stonefall Avenue, Harrogate, North Yorkshire HG2 7NS. Tel: 0423 508359.

Price £5.95 including VAT and postage.

```
10 POKE 752,1:PRINT CHR$(125)
20 POSITION 2,2
30 KEY=31-PEEK(632)-16*PEEK(644)
40 PRINT KEY;" ":GOTO 20
```

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	4718	20	2353	30	5319
40	3966				

Program I: Test routine for the musical keyboard

```
10 FOR X=0 TO 35:READ D:POKE 1755+X,D:
NEXT X:REM Vertical Blank Routine
20 DATA 104,162,6,160,230,169,7,32,92,
228,96,173,132,2,10,10,10,10,24,109
30 DATA 120,2,73,31,141,255,6,240,4,16
9,0,133,77,76,98,228
40 X=USR(1755):REM key value (1 to 25)
 now automatically returned at address
 1791
50 DIM P(25):FOR X=0 TO 25:READ D:P(X)
=D:NEXT X:REM Pitch values
60 DATA 0,193,182,173,162,153,144,136,
128,121,114,108,102
70 DATA 96,91,85,81,76,72,68,64,60,57,
53,50,47
80 SOUND 0,P(PEEK(1791)),10,8:GOTO 80
```

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	15347	20	10552	30	8419
40	19531	50	12485	60	8395
70	6815	80	6353		

Program II: Simple note playing program

```
10 FOR X=0 TO 35:READ D:POKE 1755+X,D:
NEXT X:REM Vertical Blank Routine
20 DATA 104,162,6,160,230,169,7,32,92,
228,96,173,132,2,10,10,10,10,24,109 .
30 DATA 120,2,73,31,141,255,6,240,4,16
9,0,133,77,76,98,228
40 X=USR(1755):REM key value (1 to 25)
 now automatically returned at address
 1791
50 DIM P(25):FOR X=0 TO 25:READ D:P(X)
=D:NEXT X:REM Pitch values
60 DATA 0,193,182,173,162,153,144,136,
128,121,114,108,102
70 DATA 96,91,85,81,76,72,68,64,60,57,
53,50,47
80 DIM PITCH(100),TIME(100):REM maximu
m number of notes allowed - change it
if necessary
90 PRINT CHR$(125);"START WHEN READY"
100 X=0:POKE 764,255
110 IF PEEK(1791)=0 THEN 110:REM wait
for first note
120 POKE 20,0:KEY=PEEK(1791):REM start
 timer and read key value
130 PITCH(X)=P(KEY):REM get pitch valu
e for that key
140 SOUND 0,P(KEY),10,8:REM generate t
he appropriate tone
150 IF PEEK(764)<>255 THEN POKE 764,25
5:GOTO 180:REM branch if any keyboard
key pressed
160 IF KEY=PEEK(1791) THEN 150:REM wai
t until value of KEY changes
170 TIME(X)=PEEK(20):X=X+1:GOTO 120:RE
M store duration value and return for
next note
180 FINISH=X:SOUND 0,0,0,0:GOTO 230
190 FOR X=0 TO FINISH:POKE 20,0:REM st
art replay
200 SOUND 0,PITCH(X),10,8:REM generate
 tone
210 IF PEEK(20)<TIME(X)/N THEN 210:REM
 hold it for specified duration
220 NEXT X:SOUND 0,0,0,0
230 PRINT "Press SELECT to replay"
240 PRINT "Press START to start again"
250 IF PEEK(53279)=6 THEN GOTO 90
260 IF PEEK(53279)=5 THEN ? "INPUT TEM
PO":INPUT N:GOTO 190
```

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	15347	20	10552	30	8419
40	19531	50	12485	60	8395
70	6815	80	20788	90	6863
100	2676	110	10099	120	14251
130	12526	140	12887	150	18197
160	14341	170	19902	180	5816
190	10029	200	9223	210	15351
220	3821	230	7566	240	8417
250	5289	260	10261	270	1625

Program III: Additional lines for the music recorder – enter these after typing in Program II

```
                   ;VERTICAL BLANK ROUTINE
004D               ATRACT =    $4D
06FF               HOLD   =    $6FF
0278               STICK  =    $278
0284               STRIG  =    $284
E45C               SETVB  =    $E45C
E462               XITVBL =    $E462
                   ;
0000                      *=   $6DB
                   ;
06DB 68            START  PLA
06DC A206                 LDX  #VBCODE/256
06DE A0E6                 LDY  #VBCODE&255
06E0 A907                 LDA  #7
06E2 205CE4               JSR  SETVB
06E5 60                   RTS
                   ;
06E6 AD8402        VBCODE LDA  STRIG
06E9 0A                   ASL  A
06EA 0A                   ASL  A
06EB 0A                   ASL  A
06EC 0A                   ASL  A
06ED 18                   CLC
06EE 6D7802               ADC  STICK
06F1 491F                 EOR  #31
06F3 8DFF06               STA  HOLD
06F6 F004                 BEQ  EXIT
06F8 A900                 LDA  #0
06FA 854D                 STA  ATRACT
06FC 4C62E4        EXIT   JMP  XITVBL
```

Program IV: Source listing of Vertical Blank routine

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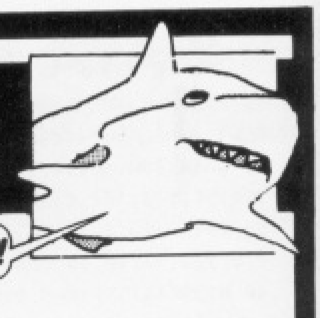
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ILLUMINATIONS

THIS is rather different to the usual arcade and shoot-'em-up games. It is a challenge of wits, not joystick dexterity.

The micro will select a random pattern of blocks on a three-by-three grid. Your task is to rearrange the blocks so that they are all illuminated, bar the centre one. It is simple when you get the hang of it – but then so was the Rubik Cube!

You control the program with keys 1 to 9. Each will invert a section of the grid, as shown in Figure I. For example, if you press 5 every square is affected – each dark square will light and each illuminated square will go blank.

On the Novice level you have as long as you want to complete your task, so it is a good idea to get some practice here.

On Advanced level you have a time limit of 20 seconds to finish - which isn't too hard once you've got the hang of the controls.

Genius level is the hardest of all – you have only 15 seconds per game, and the Atari will occasionally throw in a move of its own to throw you off the scent.

The program was written in machine code with the assembler/editor cartridge, but we have printed a version which will allow everyone to use it.

By MICHAEL LEVIEN

After typing in the listing check it out with Get-It-Right! This is most important because the entire Basic program is simply a set of DATA statements containing the machine code.

If you have made a mistake your micro will almost certainly crash as soon as you type RUN, and you'll have no hope of recovering your hard work. Make sure that you have not missed typing a number – or even worse, a whole line.

Once you're sure you've typed it correctly, SAVE a copy and then type RUN. The screen will go blank while the machine code is POKEd into memory, and after about 30 seconds you'll be greeted by the main title screen.

At this stage you can use the Select key to change the level of play, or the Start key to begin. You may press Option at any time to return to this screen.

For those interested in machine code programming we have included the full source listing on the monthly disc and cassette, and it will also be available on MicroLink. Unfortunately, space restrictions mean that we can not print it in full here.

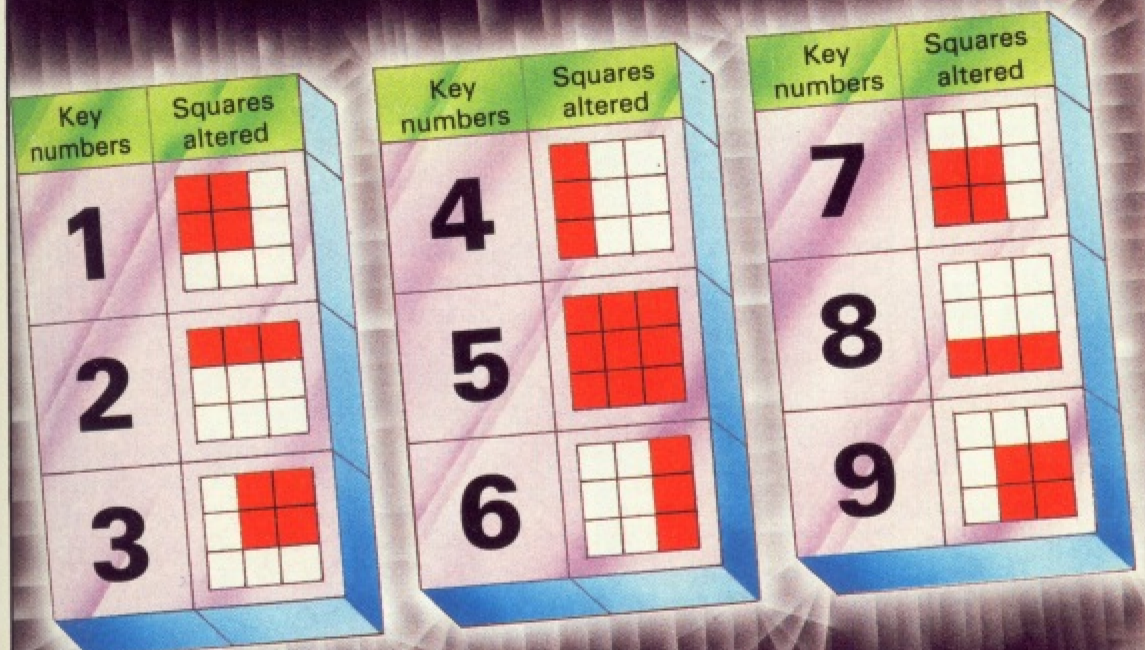


Figure I: Keyboard control codes

```
10 REM *+*+*+*+*+*+*+*+*+*+*
20 REM *  ILLUMINATIONS  *
30 REM *       by        *
40 REM *   MIKE LEVIEN   *
50 REM *+*+*+*+*+*+*+*+*+*+*
60 POKE 559,0:C=0:CHK=0:RESTORE 1000
70 READ BYTE
80 IF BYTE=-1 THEN 130
90 POKE 16640+INC,BYTE
100 INC=INC+1
110 CHK=CHK+BYTE
120 GOTO 70
130 POKE 559,34
140 IF CHK=163039 THEN X=USR(16640)
150 ? :? "KPLEASE CHECK DATA":END
1000 DATA 32,101,228
1010 DATA 32,100,68,32,161
1020 DATA 68,32,111,66,32,17,67
1030 DATA 32,38,66,76,9,65,173
1040 DATA 31,71,240,3,76,98,228
1050 DATA 169,0,133,77,173,211,69
1060 DATA 208,114,173,84,70,240,10
```

```
1070 DATA 170,189,77,70,141,6,210
1080 DATA 206,84,70,173,29,71,208
1090 DATA 59,173,27,71,208,54,169
1100 DATA 60,141,27,71,206,165,72
1110 DATA 173,165,72,201,15,208,20
1120 DATA 169,25,141,165,72,206,164
1130 DATA 72,173,164,72,201,15,208
1140 DATA 5,169,16,141,164,72,173
1150 DATA 164,72,201,16,208,12,173
1160 DATA 165,72,201,16,208,5,169
1170 DATA 1,141,28,71,173,23,71
1180 DATA 208,98,162,0,173,252,2
1190 DATA 221,184,70,208,12,138,141
1200 DATA 21,71,169,6,141,84,70
1210 DATA 76,152,65,232,224,9,208
1220 DATA 231,76,220,65,174,21,71
1230 DATA 189,193,70,133,203,189,202
1240 DATA 70,133,204,169,0,141,22
1250 DATA 71,168,177,203,201,255,240
1260 DATA 38,170,189,85,70,133,205
1270 DATA 189,94,70,133,206,160,0
1280 DATA 177,205,170,189,158,71,73
1290 DATA 1,157,158,71,200,192,9
1300 DATA 208,240,238,22,71,173,22
1310 DATA 71,76,170,65,169,5,141
1320 DATA 23,71,169,255,141,252,2
1330 DATA 173,23,71,240,3,206,23
1340 DATA 71,173,158,71,240,45,173
1350 DATA 162,71,240,40,173,166,71
1360 DATA 240,35,173,238,71,240,30
1370 DATA 173,242,71,208,25,173,246
1380 DATA 71,240,20,173,62,72,240
1390 DATA 15,173,66,72,240,10,173
1400 DATA 70,72,240,5,169,1,141
1410 DATA 26,71,206,27,71,169,0
1420 DATA 141,211,69,76,98,228,173
1430 DATA 212,69,201,2,208,36,165
1440 DATA 20,205,24,71,208,29,173
1450 DATA 10,210,41,15,201,8,16
1460 DATA 20,141,21,71,169,1,141
1470 DATA 211,69,32,245,67,169,200
1480 DATA 141,24,71,169,0,133,20
1490 DATA 173,31,208,201,3,208,3
1500 DATA 76,107,66,173,28,71,208
1510 DATA 11,173,26,71,240,193,32
1520 DATA 12,68,76,110,66,32,215
1530 DATA 67,96,169,192,141,14,212
1540 DATA 169,239,141,48,2,169,66
1550 DATA 141,49,2,169,1,141,31
1560 DATA 71,169,6,141,200,2,169
1570 DATA 0,141,0,210,141,2,210
1580 DATA 141,4,210,141,6,210,141
1590 DATA 84,70,169,168,141,1,210
1600 DATA 141,3,210,141,5,210,169
1610 DATA 166,141,7,210,173,31,208
1620 DATA 41,1,208,8,173,31,208
1630 DATA 41,1,240,249,96,173,31
1640 DATA 208,41,2,208,234,238,212
1650 DATA 69,173,212,69,201,3,208
1660 DATA 5,169,0,141,212,69,174
1670 DATA 212,69,189,213,69,141,12
1680 DATA 67,189,216,69,141,13,67
1690 DATA 169,25,141,24,71,32,140
1700 DATA 68,173,31,208,41,2,240
1710 DATA 249,76,169,66,112,112,112
1720 DATA 112,112,128,71,148,69,112
1730 DATA 112,112,70,188,69,112,112
1740 DATA 70,168,69,112,112,112,112
1750 DATA 112,112,112,112,71,219,69
1760 DATA 65,239,66,169,64,141,14
1770 DATA 212,169,0,141,47,2,141
1780 DATA 211,69,141,28,71,169,1
1790 DATA 141,29,71,32,211,68,32
1800 DATA 225,68,173,212,69,168,185
1810 DATA 23,70,141,196,2,185,26
1820 DATA 70,141,197,2,185,29,70
1830 DATA 141,199,2,185,74,70,141
1840 DATA 2,210,24,105,2,141,4
1850 DATA 210,169,164,141,3,210,141
1860 DATA 5,210,169,0,141,200,2
1870 DATA 169,119,141,48,2,169,69
1880 DATA 141,49,2,169,34,141,47
1890 DATA 2,169,0,141,31,71,162
1900 DATA 255,232,224,9,240,33,173
1910 DATA 10,210,48,246,138,141,21
1920 DATA 71,169,25,141,24,71,32
1930 DATA 140,68,169,1,141,211,69
1940 DATA 173,211,69,208,251,32,245
1950 DATA 67,76,113,67,169,1,141
1960 DATA 29,71,169,0,141,26,71
1970 DATA 173,212,69,240,33,162,4
1980 DATA 202,189,1,71,157,167,72
1990 DATA 224,0,208,245,174,212,69
2000 DATA 189,32,70,141,164,72,189
2010 DATA 35,70,141,165,72,169,0
2020 DATA 141,29,71,169,50,141,27
2030 DATA 71,169,200,141,24,71,169
2040 DATA 0,141,84,70,96,169,0
2050 DATA 141,30,71,206,30,71,173
2060 DATA 30,71,141,0,210,240,13
2070 DATA 160,2,162,0,202,208,253
2080 DATA 136,208,248,76,220,67,96
2090 DATA 160,0,185,5,71,141,0
2100 DATA 210,240,12,169,1,141,24
2110 DATA 71,32,140,68,200,76,247
2120 DATA 67,96,169,1,141,29,71
2130 DATA 169,168,141,1,210,141,3
2140 DATA 210,141,5,210,162,0,189
2150 DATA 38,70,141,0,210,189,50
2160 DATA 70,141,2,210,189,62,70
2170 DATA 141,4,210,169,8,141,24
2180 DATA 71,32,140,68,169,0,141
2190 DATA 0,210,141,2,210,141,4
2200 DATA 210,169,2,141,24,71,32
2210 DATA 140,68,232,224,13,208,206
2220 DATA 169,0,141,0,210,141,2
2230 DATA 210,141,4,210,169,100,141
2240 DATA 24,71,32,140,68,96,169
2250 DATA 49,141,0,2,169,69,141
2260 DATA 1,2,169,192,141,14,212
2270 DATA 160,21,162,65,169,7,32
2280 DATA 92,228,169,0,141,8,210
2290 DATA 169,219,141,12,67,169,69
2300 DATA 141,13,67,96,169,0,133
2310 DATA 19,133,20,165,19,205,25
2320 DATA 71,208,249,165,20,205,24
2330 DATA 71,208,249,96,162,0,189
2340 DATA 0,224,157,0,8,189,0
2350 DATA 225,157,255,8,189,0,226
2360 DATA 157,255,9,189,0,227,157
2370 DATA 255,10,232,208,229,162,0
2380 DATA 169,255,157,8,8,157,216
2390 DATA 8,232,224,8,208,245,169
2400 DATA 8,141,244,2,96,160,200
2410 DATA 169,0,153,54,71,153,254
2420 DATA 71,136,208,245,96,162,15
2430 DATA 169,193,157,134,71,157,214
2440 DATA 71,157,38,72,157,118,72
2450 DATA 202,224,2,208,239,160,103
2460 DATA 169,4,141,32,71,169,34
2470 DATA 133,213,169,71,133,214,169
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	3206	20	4473	30	3390
40	4010	50	3206	60	6187
70	2115	80	3510	90	3966
100	1832	110	2389	120	1428
130	1974	140	5430	150	5986
1000	2513	1010	3370	1020	4123
1030	4038	1040	4173	1050	4507
1060	4681	1070	4463	1080	4492
1090	4541	1100	4473	1110	4694
1120	4809	1130	4694	1140	4480
1150	4686	1160	4482	1170	4095
1180	4256	1190	4761	1200	4163
1210	4511	1220	4439	1230	4897
1240	4459	1250	4836	1260	4731
1270	4445	1280	4831	1290	4322
1300	4674	1310	4277	1320	4491
1330	4252	1340	4706	1350	4677
1360	4708	1370	4784	1380	4438
1390	4466	1400	4108	1410	4203
1420	4730	1430	4458	1440	4487
1450	4060	1460	4186	1470	4694
1480	4259	1490	4210	1500	4527
1510	4461	1520	4254	1530	4770
1540	4543	1550	4056	1560	4220
1570	4038	1580	4388	1590	4511
1600	4424	1610	4708	1620	4105
1630	4283	1640	4668	1650	4474
1660	4260	1670	4717	1680	4491
1690	4452	1700	4223	1710	4754
1720	4731	1730	4772	1740	4729
1750	4702	1760	4522	1770	4195
1780	4249	1790	4280	1800	4813
1810	4325	1820	4285	1830	4473
1840	3943	1850	4708	1860	4114
1870	4550	1880	4256	1890	4071
1900	4699	1910	4692	1920	4260
1930	4453	1940	4766	1950	4274

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
1960	4167	1970	4444	1980	4464
1990	4747	2000	4785	2010	4282
2020	4483	2030	4746	2040	4054
2050	4449	2060	4236	2070	4458
2080	4769	2090	4009	2100	4445
2110	4509	2120	4198	2130	4407
2140	4420	2150	4316	2160	4212
2170	4248	2180	4230	2190	4070
2200	4230	2210	4730	2220	4097
2230	4684	2240	4295	2250	4126
2260	4210	2270	4281	2280	4234
2290	4771	2300	4257	2310	4445
2320	4724	2330	4504	2340	3972
2350	4477	2360	4569	2370	4704
2380	4524	2390	4530	2400	4291
2410	4533	2420	4720	2430	4867
2440	4483	2450	4697	2460	4338
2470	4830	2480	4728	2490	4710
2500	4678	2510	4479	2520	4702
2530	4524	2540	4516	2550	4797
2560	4656	2570	4524	2580	4722
2590	4433	2600	4745	2610	4541
2620	4720	2630	4673	2640	4427
2650	2982	2660	2982	2670	3247
2680	3940	2690	4830	2700	4004
2710	3287	2720	4032	2730	3828
2740	3293	2750	4640	2760	3160
2770	3450	2780	3339	2790	4010
2800	3288	2810	2856	2820	4316
2830	3383	2840	2856	2850	4654
2860	2856	2870	4693	2880	4267
2890	4016	2900	4061	2910	4285
2920	3921	2930	3423	2940	4448
2950	4015	2960	5008	2970	4107
2980	3471	2990	3667	3000	3979
3010	3767	3020	4238	3030	4680
3040	4833	3050	4798	3060	4977
3070	5002	3080	5056	3090	5050
3100	4028	3110	4728	3120	4709
3130	3931	3140	3215	3150	3502
3160	3202	3170	3272	3180	3255
3190	3544	3200	3977	3210	4866
3220	4015	3230	3123	3240	2856
3250	3882	3260	4836	3270	4521

```
2480 DATA 12,141,33,71,169,193,145
2490 DATA 213,165,213,24,105,20,133
2500 DATA 213,165,214,105,0,133,214
2510 DATA 206,33,71,173,33,71,208
2520 DATA 231,152,24,105,4,168,206
2530 DATA 32,71,173,32,71,208,205
2540 DATA 96,72,162,15,173,210,69
2550 DATA 141,209,69,173,209,69,141
2560 DATA 10,212,141,23,208,24,105
2570 DATA 2,141,209,69,202,16,238
2580 DATA 162,15,173,209,69,141,10
2590 DATA 212,141,23,208,56,233,2
2600 DATA 141,209,69,202,16,238,206
2610 DATA 208,69,173,208,69,208,8
2620 DATA 169,3,141,208,69,238,210
2630 DATA 69,169,10,141,23,208,104
2640 DATA 64,112,112,112,71,34,71
2650 DATA 6,6,6,6,6,6,6
2660 DATA 6,6,6,6,6,6,6
2670 DATA 6,6,6,6,6,6,65
2680 DATA 119,69,0,0,0,105,108
2690 DATA 108,117,109,105,110,97,116
2700 DATA 105,111,110,115,0,0,0
2710 DATA 0,0,0,0,0,98,121
2720 DATA 0,0,109,0,108,101,118
2730 DATA 105,101,110,0,0,0,0
2740 DATA 0,0,0,0,0,97,116
2750 DATA 97,114,105,0,117,115,101
2760 DATA 114,0,0,0,0,0,3
2770 DATA 0,0,0,0,219,239,3
2780 DATA 69,69,70,0,0,0,0
2790 DATA 0,0,0,110,111,118,105
2800 DATA 99,101,0,0,0,0,0
2810 DATA 0,0,0,0,0,0,0
2820 DATA 0,97,100,118,97,110,99
2830 DATA 101,100,0,0,0,0,0
2840 DATA 0,0,0,0,0,0,0
2850 DATA 0,103,101,110,105,117,115
2860 DATA 0,0,0,0,0,0,0
2870 DATA 216,120,56,24,138,40,152
2880 DATA 216,136,16,18,17,16,16
2890 DATA 21,40,45,47,47,40,40
2900 DATA 31,31,29,29,29,29,60
2910 DATA 60,72,72,91,91,108,108
2920 DATA 96,81,121,121,0,0,0
2930 DATA 0,0,0,0,0,243,243
2940 DATA 243,243,243,182,144,0,0
2950 DATA 62,64,66,68,70,0,103
2960 DATA 112,121,130,139,148,157,166
2970 DATA 175,70,70,70,70,70,70
2980 DATA 70,70,70,0,1,2,20
2990 DATA 21,22,40,41,42,4,5
3000 DATA 6,24,25,26,44,45,46
3010 DATA 8,9,10,28,29,30,48
3020 DATA 49,50,80,81,82,100,101
3030 DATA 102,120,121,122,84,85,86
3040 DATA 104,105,106,124,125,126,88
3050 DATA 89,90,108,109,110,128,129
3060 DATA 130,160,161,162,180,181,182
3070 DATA 200,201,202,164,165,166,184
3080 DATA 185,186,204,205,206,168,169
3090 DATA 170,188,189,190,208,209,210
3100 DATA 31,30,26,24,29,27,51
3110 DATA 53,48,211,216,220,225,229
3120 DATA 239,243,248,252,70,70,70
3130 DATA 70,70,70,70,70,70,0
3140 DATA 1,3,4,255,0,1,2
3150 DATA 255,1,2,4,5,255,0
3160 DATA 3,6,255,0,1,2,3
3170 DATA 4,5,6,7,8,255,2
3180 DATA 5,8,255,3,4,6,7
3190 DATA 255,6,7,8,255,4,5
3200 DATA 7,8,255,52,41,45,37
3210 DATA 243,204,193,144,108,128,96
3220 DATA 81,68,60,50,42,47,40
3230 DATA 29,0,0,0,0,0,0
3240 DATA 0,0,0,0,0,0,0
3250 DATA 0,0,0,0,105,108,108
3260 DATA 117,109,105,110,97,116,105
3270 DATA 111,110,115,0,0,0,0,0,-1
```

Tired of typing?

Take advantage of our finger-saving offer on Page 49.

STEPHEN WILLIAMSON ends his series on player missile graphics by taking . . .

A LAST TRIP ROUND THE PLAYFIELDS

TO conclude this series on the player missile graphics system, we will now take a more detailed look at playfields, the backgrounds that all the action takes place on.

The player missile system recognises 4 playfields – numbered 0 to 3, which means that if you use a graphic mode with more than 4 colours things can get tricky. The system normally works with playfields that are set by colour registers 708 to 712, and drawn by the use of COLOR commands 0 to 3.

If, for example, you enter graphics mode 12, then only 4 out of the 5 colours in this mode can be used as playfields for the purposes of the player missile system. The fifth colour can still be displayed on the screen, but cannot be involved in any collision detecting routines.

Using collision detection and priority on modes with less than 4 colours is fairly straightforward – though of course the number of playfields is restricted. There are two exceptions to this rule – the GTIA graphics modes 9 and 11 cannot normally be used to detect playfield collisions.

Graphics mode 10 is very strange. This is a 9 colour mode, but only colours set by registers 704 to 707 (and not 708 to 712 as in other modes) are recognised as playfields. Registers 704 to 707 also control the player and missile colours, so players and missiles will take on the same colour as the corresponding playfield number.

To help you design playfields for inclusion in your player missile programs, this month's program is a utility which can be used to draw playfields in graphic modes 3, 5, 7 or 15 – all 4 colour/4 playfield modes. The playfield designs can then be saved to disc or cassette ready to be loaded back into your programs.

Playfield Designer is a much improved version of the Computer Canvas program from October 1985 issue of *Atari User*. A display list interrupt routine (lines 1030 to 1120) has been included so that the text window at the bottom of the screen will not change colour when the colour registers are altered. Extra commands have also been added.

When you run the program it first asks you to choose the resolution of the graphics screen – 40 × 20 pixels (Mode 3), 80 × 40 pixels (Mode 5), 160 × 80 pixels (Mode 7) or 160 × 160 pixels (Mode 15).

After a few seconds delay for the initialisation routines, a cross appears at the centre of the screen. This is a player and acts as a cursor.

Commands are accessed by pressing the key indicated in inverse letters in the text window. A key prefixed by S/ means that the appropriate key must be pressed at the same time as the Shift key is held down.

To exit from some commands (such as Draw or Fill), press the joystick fire button. The full details are given in the accompanying panel.

At the bottom of the text window the current X and Y coordinates of the cursor are displayed (X is the horizontal coordinate, Y the vertical). This is useful for working out routines for use in Basic programs that involve the DRAWTO and PLOT statements. By taking note of the X and Y coordinates, the data for these Basic statements can be calculated.

The load and save routines contained in Playfield Designer can

Color (C) This changes the colour of the current playfield. Colours are numbered from 0 to 15 as shown in Figure I. Brightness must be within the range 0 to 14, even numbers only – an odd value will default to the even number 1 below. Press Return after entering in the colour and brightness values.

Draw (D) A pixel is plotted beneath the cursor. Move the cursor around the screen by means of a joystick in order to draw a design.

Erase (E) Erases any pixel that is beneath the cursor.

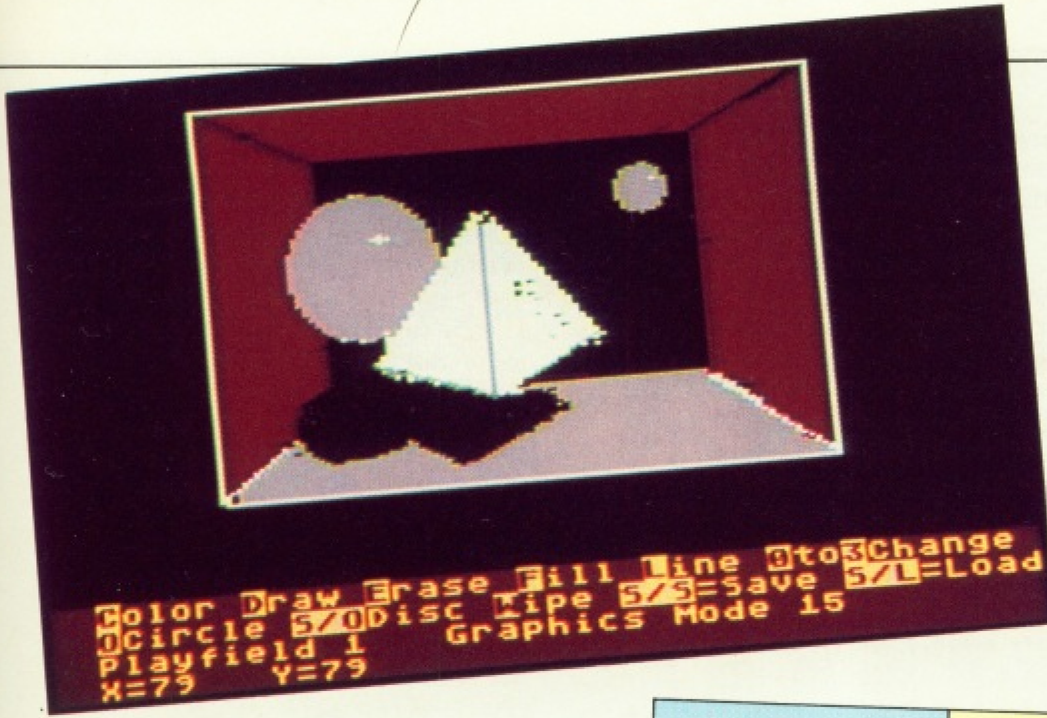
Fill (F) Used to fill in enclosed areas. A line is drawn from beneath the cursor and to its right until it touches another pixel. By moving the cursor around the inside of a shape this command acts as a paintbrush to fill in the area. If the Fill command is used outside of an enclosed area then the line will wraparound the screen. This can be used, for example, to colour the whole width of a section of the screen.

Line (L) Press the joystick fire button and a pixel will be plotted beneath the cursor. This is the beginning of the line. Move the cursor to another part of the screen and press the fire button again and a line will be drawn from the beginning point to the cursor.

Change (0 to 3) Keys 0 to 3 change the playfield which the program operates on. Playfield 0 is the same colour as the background so, unless you are drawing on top of another playfield, no pixels will be visible on the screen. You can change the colour of Playfield 0 to alter the background colour.

Circle (O) When key O is pressed a pixel is plotted beneath the cursor which is the centre of the circle. Move the cursor either horizontally or vertically (but not diagonally) to another part of the screen and press the fire button. The distance between the current cursor position and the centre of the circle is the radius.

Command summary



be easily adapted for use in your own programs to enable you to save or load graphic screens from within a Basic program. You may need to renumber them to fit into your program.

The save routine is contained in lines 1500 to 1610 and the load routine in lines 1730 to 1820. Both access the subroutine found in lines 1830 to 1980.

Lines 1830 to 1950 calculate the length of the screen data file according to which graphics mode you are using. Although Playfield Designer operates in modes 3, 5, 7 and 15 only, the listing calculates these lengths for all 16 Atari graphics modes to enable you to adapt it for use with any screen.

Obviously, if you use this routine in a program that loads a screen or screens in one graphics mode only, then you could delete all the lines between 1830 and 1950 except the one appropriate to the mode you are using.

COLOUR	CODE
Grey	0
Light Orange (Gold)	1
Orange	2
Red Orange	3
Pink	4
Purple	5
Purple-Blue	6
Blue	7
Blue	8
Light Blue	9
Turquoise	10
Green Blue	11
Green	12
Yellow-Green	13
Orange	14
Light Orange	15

Figure I: Numbers for use in the Colour option

Lines 1960 to 1970 contain a short 6 byte machine code routine that is stored in the variable *IO$*. This is used during the save and load routines to access the IOCB system that takes care of reading and writing the data file.

If you are using a cassette then the following alterations need to be made to the routines as listed if you are to copy them to your own programs:

In the save routine delete line 1550 and change line 1540 to read:

1540 OPEN #1,8,0, "C:"

and in the load routine delete line 1740 and alter line 1730 to:

1730 OPEN # 1,4,0, "C:"

Disc users should delete line 1540 and change line 1550 to:

1550 OPEN # 1,8,0,"D:PLAYF"

and delete line 1730 and alter line 1740 to:

1740 OPEN # 1,4,0,"D:PLAYF"

The data file is given the name "PLAYF", but of course any other file name could be used by altering lines 1550 and 1740.

If you have lowered RAMTOP, (stored at address 106), then the load routine will change the RAMTOP value to the value held when the data was saved.

● *This series has been designed to provide the Basic programmer with a working knowledge of the player missile graphic system. Machine code programmers should find that a lot of the information given in this series is also relevant to them. Once you understand how the player missile system works, then controlling it in machine code is relatively simple. The series on writing an arcade game (Atari User January, February and March 1985) demonstrates such machine code player missile techniques.* ■

```
10 REM  PLAYFIELD DESIGNER
20 REM  (COMPUTER CANVAS VER.II)
30 REM  By Stephen Wiliamson
40 REM  For Atari User
50 DIM DEV$(10),IO$(10)
60 ? CHR$(125);"CHOOSE RESOLUTION"
70 ? :? "1 40x20  2 80x40  3 160x80  4
 160x160"
80 CLOSE #1
90 OPEN #1,4,0,"K:"
100 GET #1,B
110 IF B<49 OR B>52 THEN GOTO 60
120 CLOSE #1
130 IF B=49 THEN MODE=3
140 IF B=50 THEN MODE=5
150 IF B=51 THEN MODE=7
160 IF B=52 THEN MODE=15
170 GRAPHICS MODE
180 X1=79:Y1=79
190 IF MODE=3 THEN HO1=4:YY1=8:X1=INT(
X1/4):Y1=INT(Y1/8):HO=122:YY=99:ANTMOD
E=8:LINE=24
200 IF MODE=5 THEN HO1=2:YY1=4:X1=INT(
X1/2):Y1=INT(Y1/4):HO=123:YY=99:ANTMOD
E=10:LINE=44
210 IF MODE=7 THEN HO1=1:YY1=2:Y1=INT(
Y1/2):HO=124:YY=100:ANTMODE=13:LINE=84
220 IF MODE=15 THEN HO1=1:YY1=1:HO=124
:YY=101:ANTMODE=14:LINE=166
230 X=X1:Y=Y1
240 GOSUB 870
250 GOSUB 790
260 REM ***MAIN LOOP***
270 S=STICK(0):IF STRIG(0)=0 THEN POKE
 764,255:KEY=255
280 TRAP 1820
290 IF FLC=1 AND STRIG(0)=0 THEN GOSUB
 1170
300 KEY=PEEK(764):IF KEY<>255 THEN GOS
UB 480
310 IF FL3=1 AND STRIG(0)=0 THEN DRAWT
O X,Y:FL3=0
```

Disc (Shift+O) Disc uses the same plotting routine as Circle, but adds a fill command to give a solid circle or disc.

Wipe (W) Erases the whole of the screen display and re-initialises the program.

Save (Shift+S) Saves the screen. The program asks if you want to save to cassette or disc and then writes the appropriate data to the chosen device. If using cassette with Graphics Mode 15 (160 × 160 pixels) then, because of the large amount of memory involved, this will take about six minutes to save or load.

Load (Shift+L) Loads previously saved screen area.

```
320 IF S<>15 THEN POKE 77,0
330 IF S=15 THEN 270
340 H=0-(S=9)-(S=10)-(S=11)+(S=5)+(S=6
)+(S=7)
350 V=0-(S=6)-(S=10)-(S=14)+(S=5)+(S=9
)+(S=13)
360 IF H<>0 THEN HO=HO+HO1*H:X=X+H
370 IF V<>0 THEN YY=YY+YY1*V:Y=Y+V
380 IF X<0 THEN X=0:HO=HO+HO1
390 IF X>X1*2+1 THEN X=X1*2+1:HO=HO-HO
1
400 IF Y<0 THEN Y=0:YY=YY+YY1
410 IF Y>Y1*2+1 THEN Y=Y1*2+1:YY=YY-YY
1
420 ? "X=   ←←←";X;"   Y=   ←←←";Y;" ↑
"
430 POKE 53248,HO
440 IF V<>0 THEN D=USR(1536,PMBASE,PMB
ASE+1024+YY,21)
450 IF STICK(0)<>15 THEN POKE 77,0
460 GOTO 270
470 REM **COMMAND ROUTINE**
480 IF PEEK(764)=58 THEN PLOT X,Y:RETU
RN
490 IF KEY=42 THEN COLOR 0:PLOT X,Y:CO
LOR CO
500 IF KEY=56 THEN GOSUB 840
510 IF KEY=18 THEN GOSUB 680
520 IF KEY=50 THEN CO=0:COLOR 0:GOSUB
790
530 IF KEY=31 THEN CO=1:COLOR 1:GOSUB
790
540 IF KEY=30 THEN CO=2:COLOR 2:GOSUB
790
550 IF KEY=26 THEN CO=3:COLOR 3:GOSUB
790
560 IF KEY=8 OR KEY=72 THEN GOSUB 1140
570 IF KEY=46 THEN GOTO 170
580 IF KEY=0 THEN GOSUB 640
590 IF KEY=126 THEN GOSUB 1370:POP :GO
TO 180
600 IF KEY=64 THEN POKE 53248,0:GOSUB
1630:POP :GOTO 180
610 IF KEY=28 THEN 60
620 RETURN
630 REM ***DRAW LINE***
640 IF FL3=0 THEN PLOT X,Y:FL3=1
650 POKE 764,255:RETURN
660 RETURN
670 REM ***CHANGE COLOUR***
680 POKE 764,255:? CHR$(125);"COLOR 0-
15";
690 INPUT C
700 IF CO=0 THEN SETCOLOR 4,C,0:GOTO 7
20
710 SETCOLOR CO-1,C,8
720 ? "BRIGHTNESS 0-14";
730 INPUT B
740 IF CO=0 THEN SETCOLOR 4,C,B:IF B>8
 THEN POKE 704,16
750 IF CO=0 AND B<9 THEN POKE 704,30
760 IF CO=0 THEN 790
770 SETCOLOR CO-1,C,B
780 REM **VALID COMMANDS**
790 ? "↰Color Draw Erase Fill Line Gto
XChange"
800 ? "OCircle S/ODisc Wipe S/S=Save S
/L=Load";:? "Playfield ";CO;"→→→Graphi
cs Mode ";PEEK(87)
810 ? "X=   ←←←";X;"   Y=   ←←←";Y;" ↑
"
820 POKE 764,255:RETURN
830 REM ***FILL***
840 POKE 765,CO:PLOT X,Y
850 XIO 18,#6,0,0,"S:"
860 RETURN
870 REM ***INITIALISATION***
880 RESTORE :POKE 764,255
890 POKE 752,1:FLC=0:FL3=0:DISC=0
900 POKE 53277,3:POKE 559,62
910 POKE 704,30:POKE 53248,HO:FL3=0
920 A=PEEK(106)-40:POKE 54279,A
930 PMBASE=A*256:CO=1:COLOR CO
940 FOR I=0 TO 255:POKE PMBASE+I,0:POK
E PMBASE+1024+I,0:NEXT I
950 FOR I=0 TO 17:READ B:POKE PMBASE+1
024+YY+I,B:POKE PMBASE+I,B:NEXT I
960 DATA 0,0,0,0,0,0,0,0,16,16,68,16,1
6,0,0,0,0,0
970 FOR I=0 TO 86:READ A:POKE 1536+I,A
:NEXT I
980 DATA 104,201,3,208,81,104,133,225,
104,133,224,104,133,227,104,133,226,10
4,133,229
990 DATA 104,133,228,169,0,133,230,133
,231,168,177,224,145,226,24,169,1,101,
224,133
1000 DATA 224,169,0,101,225,133,225,24
,169,1,101,226,133,226,169,0,101,227,1
33,227
1010 DATA 24,169,1,101,230,133,230,169
,0,101,231,133,231,24,165,228,197,230,
208,206
1020 DATA 165,229,197,231,208,200,96
1030 REM *** SET-UP DLI ***
1040 DLIST=PEEK(560)+256*PEEK(561)
1050 POKE DLIST+LINE,128+ANTMODE
1060 FOR I=1630 TO 1649
1070 READ A:POKE I,A:NEXT I
1080 POKE 512,94:POKE 513,6
1090 POKE 54286,192
1100 DATA 72,138,72,169,18,141,10,212
1110 DATA 141,24,208,169,28,141,23,208
,104,170,104,64
1120 RETURN
1130 REM *** CIRCLE ***
1140 XC=X:YC=Y:FLC=1:POKE 764,255:PLOT
 X,Y
1150 IF KEY=72 THEN DISC=1
1160 RETURN
1170 XC1=X:YC1=Y:FLC=0
1180 RATIO=1:IF MODE=15 THEN RATIO=2
1190 COLOR 0:PLOT XC,YC:COLOR CO
1200 POKE 765,CO
1210 R=ABS(XC1-XC)*RATIO+ABS(YC1-YC)
1220 R2=R*R:PLOT XC,YC+R
1230 FOR Y3=R TO -R STEP -1
1240 X3=SQR(R2-(Y3*Y3))/RATIO
1250 DRAWTO XC+X3,YC+Y3
1260 NEXT Y3
1270 FOR Y3=-R TO R
1280 X3=SQR(R2-(Y3*Y3))/RATIO
1290 IF DISC=0 THEN DRAWTO XC-X3,YC+Y3
1300 PLOT XC-X3,YC+Y3
1310 IF ABS(Y3)=R THEN 1330
1320 IF DISC=1 THEN XIO 18,#6,0,0,"S:"
1330 NEXT Y3
1340 DISC=0
1350 RETURN
1360 REM *** SAVE PLAYFIELD ***
1370 REM
1380 POKE 764,255:KEY=255
1390 ? CHR$(125);" PLAYFIELD SAVE "
1400 ? "ENTER 'C' FOR CASSETTE OR 'D'
FOR DISK"
1410 INPUT DEV$
1420 IF DEV$<>"C" AND DEV$<>"D" THEN 1
400
1430 IF DEV$="C" THEN ? CHR$(125);"PUT
 DATA TAPE IN CASSETTE":? "THEN PRESS
PLAY/RECORD AND RETURN"
1440 IF DEV$="D" THEN ? CHR$(125);"PUT
 FORMATTED DISK IN DRIVE":? "THEN PRES
S RETURN"
1450 POKE 764,255
1460 IF PEEK(764)<>12 THEN GOTO 1460
1470 IF DEV$="C" THEN ? CHR$(125);"SAV
ING PLAYFIELDS TO CASSETTE"
1480 IF DEV$="D" THEN ? CHR$(125);"SAV
ING PLAYFIELDS TO DISK"
1490 ? "PLEASE WAIT ......"
1500 GRMODE=PEEK(87):SM=PEEK(88)+256*P
EEK(89)
1510 GOSUB 1830
1520 REM
1530 HISM=INT(SM/256):LOSM=SM-(HISM*25
6)
1540 IF DEV$="C" THEN OPEN #1,8,0,"C:"
1550 IF DEV$="D" THEN OPEN #1,8,0,"D:P
LAYF"
1560 PUT #1,PEEK(106):PUT #1,GRMODE:PU
T #1,LOSM:PUT #1,HISM
1570 FOR I=704 TO 712:PUT #1,PEEK(I):N
EXT I
1580 POKE 849,1:POKE 850,11:POKE 852,L
OSM:POKE 853,HISM:POKE 856,LOLEN:POKE
857,HILEN:POKE 858,8
1590 A=USR(ADR(IO$))
1600 CLOSE #1
1610 RETURN
1620 REM ***LOAD PLAYFIELD***
1630 POKE 764,255:KEY=255
1640 ? CHR$(125);" PLAYFIELD LOAD "
1650 ? "ENTER 'C' FOR CASSETTE OR 'D'
FOR DISK"
1660 INPUT DEV$
1670 IF DEV$<>"C" AND DEV$<>"D" THEN 1
640
1680 IF DEV$="C" THEN ? CHR$(125);"PLA
CE DATA CASSETTE IN PLAYER":? "THEN PR
ESS PLAY AND RETURN"
1690 IF DEV$="D" THEN ? CHR$(125);"PLA
CE DATA DISK IN DRIVE":? "THEN PRESS R
ETURN"
1700 POKE 764,255
1710 IF PEEK(764)<>12 THEN 1710
1720 ? CHR$(125);"PLAYFIELD LOADING ..
..PLEASE WAIT..."
1730 IF DEV$="C" THEN OPEN #1,4,0,"C:"
1740 IF DEV$="D" THEN OPEN #1,4,0,"D:P
LAYF"
1750 GET #1,A:POKE 106,A
1760 GET #1,MODE:GRAPHICS MODE:GOSUB 1
830
1770 GET #1,LOSM:GET #1,HISM
1780 FOR I=704 TO 712:GET #1,A:POKE I,
A:NEXT I
1790 POKE 850,7:POKE 852,LOSM:POKE 853
,HISM:POKE 856,15:POKE 857,30:POKE 858
,4
1800 A=USR(ADR(IO$))
1810 CLOSE #1
1820 RETURN
```

```
1830 IF GRMODE=0 THEN LOLEN=192:HILEN=
3
1840 IF GRMODE=1 THEN LOLEN=223:HILEN=
1
1850 IF GRMODE=2 THEN LOLEN=239:HILEN=
0
1860 IF GRMODE=3 THEN LOLEN=239:HILEN=
0
1870 IF GRMODE=4 THEN LOLEN=143:HILEN=
1
1880 IF GRMODE=5 THEN LOLEN=191:HILEN=
3
1890 IF GRMODE=6 THEN LOLEN=127:HILEN=
7
1900 IF GRMODE=7 THEN LOLEN=99:HILEN=1
5
1910 IF GRMODE>7 AND GRMODE<12 THEN LO
LEN=15:HILEN=30
1920 IF GRMODE=12 THEN LOLEN=95:HILEN=
4
1930 IF GRMODE=13 THEN LOLEN=127:HILEN
=2
1940 IF GRMODE=14 THEN LOLEN=255:HILEN
=14
1950 IF GRMODE=15 THEN LOLEN=15:HILEN=
30
1960 RESTORE 1970:FOR I=1 TO 6:READ A:
IO$(I,I)=CHR$(A):NEXT I
1970 DATA 104,162,16,76,86,228
1980 RETURN
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	15137	20	15682	30	16710
40	15642	50	3220	60	5990
70	7313	80	1559	90	2690
100	1406	110	5148	120	1559
130	3608	140	3593	150	3606
160	3632	170	2706	180	1984
190	15929	200	16142	210	13790
220	11653	230	2008	240	1926
250	1931	260	3523	270	9426
280	1844	290	6991	300	7499
310	8280	320	3929	330	2770
340	6699	350	6876	360	5593
370	5976	380	4974	390	6496
400	5229	410	6754	420	4525
430	2501	440	9132	450	5526
460	1631	470	4478	480	7216
490	8020	500	4799	510	4803
520	6984	530	6989	540	6992
550	7026	560	6205	570	4510
580	4216	590	7519	600	9453
610	3167	620	1498	630	3529
640	5033	650	4005	660	1498
670	4275	680	8072	690	1506
700	6551	710	3131	720	4828
730	1503	740	9469	750	5642
760	2744	770	3161	780	4234
790	13405	800	24524	810	4525
820	4005	830	2500	840	3913
850	2800	860	1498	870	4779
880	3826	890	5613	900	4362
910	5579	920	4713	930	4867
940	10945	950	12704	960	6739
970	7538	980	12129	990	12043
1000	11577	1010	11777	1020	4868
1030	3878	1040	5468	1050	5591
1060	3091	1070	4373	1080	3896
1090	2615	1100	4997	1110	7397
1120	1498	1130	3083	1140	7301
1150	4086	1160	1498	1170	3300
1180	5987	1190	5640	1200	2035
1210	5903	1220	4115	1230	4082
1240	4633	1250	3751	1260	1530
1270	2836	1280	4633	1290	6615
1300	3265	1310	3875	1320	5667
1330	1530	1340	1211	1350	1498
1360	4645	1370	871	1380	3676
1390	11555	1400	7527	1410	2251
1420	6010	1430	17539	1440	14841
1450	2121	1460	5499	1470	11273
1480	10264	1490	3905	1500	7513
1510	1972	1520	871	1530	6960
1540	5467	1550	6623	1560	10450
1570	6841	1580	17438	1590	2952
1600	1559	1610	1498	1620	4625
1630	3676	1640	11509	1650	7527
1660	2251	1670	6024	1680	17202
1690	14138	1700	2121	1710	4492
1720	9135	1730	5459	1740	6615
1750	3399	1760	7086	1770	4325
1780	7506	1790	13499	1800	2952
1810	1559	1820	1498	1830	6798
1840	6790	1850	6800	1860	6802
1870	6793	1880	6806	1890	6833
1900	6851	1910	9393	1920	6767
1930	6833	1940	6940	1950	6811
1960	10448	1970	3999	1980	1498



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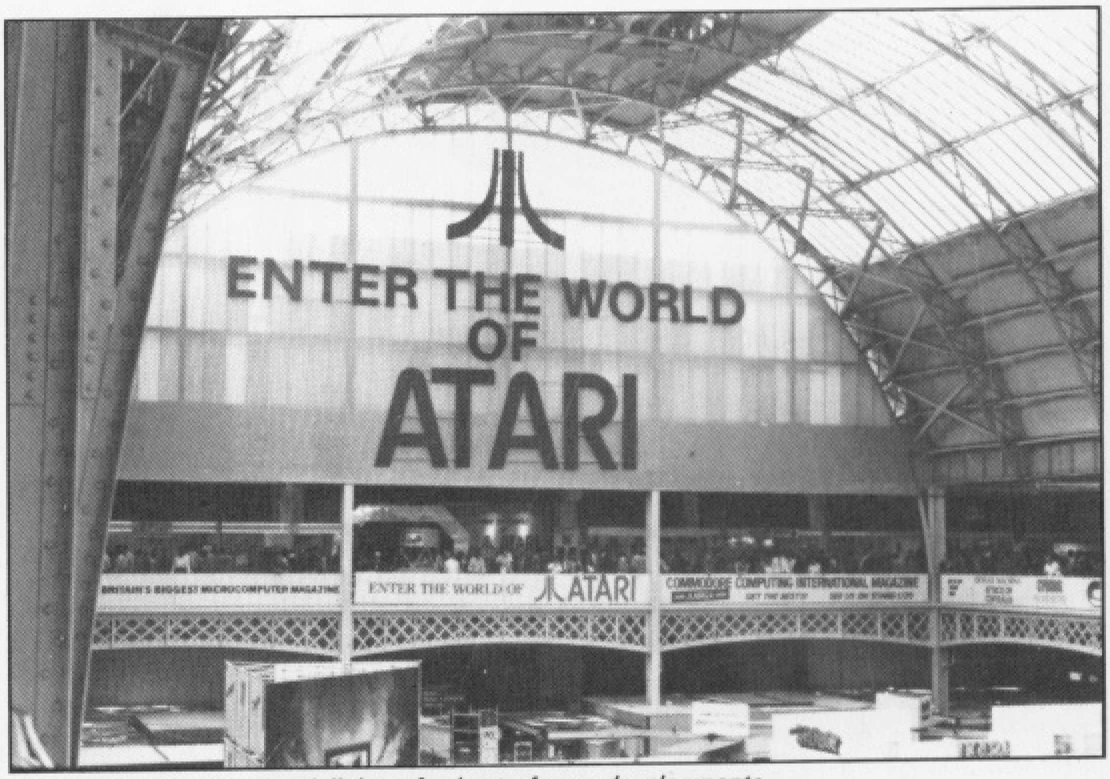
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THIS year's PCW Show marked the first anniversary of the revitalised Atari UK and the area devoted to Atari products reflected the company's position in the market.



Invitation to sample the delights of a host of new developments

Atari revitalised

By ANDREW BENNETT

Taking pride of place between the business and home sections of the show, Atari had sub-let over 1000 square metres of stand space to the companies that keep the Atari business alive – the third party hardware and software manufacturers.

New products on display on the Atari stand included the XEP-80 80 column box for the 8 bit range. About the size of a 1050 disc drive but half the height, it connects into either joystick port one or two and gives an 80 column screen on a black and white monitor. Programs can access the screen by using the "E:" driver. The XEP-80 also incorporates a centronics standard parallel printer interface. Hopefully software companies will soon be adapting their word processors and spreadsheets for the XEP-80.

On the 8 bit software side, Atari was showing Star Raiders II – the follow up to the first game that Atari produced for the 8 bit range six years ago, which has you in command of an Atarian space ship, battling against the evil Zylon fleet in deepest space.

On show for the first time were the new 2080 and 4160 STs with 2 and 4 megabytes of memory respectively. Running all programs for the 520 and 1040 STs, the new additions to the ST range are claimed to be fully compatible with their older counterparts.

The much talked about blitter chip also made an appearance inside a 1040ST. Two 1040s were displayed side by side, running exactly the same animation demonstration – a flock of birds flying across the screen. The 1040 containing the blitter chip was running the program about four or five times faster in a very impressive demonstration of the blitter's automatic speeding up abilities.

By the side of another ST was a box that looked deceptively like a hard disc but was in fact the Atari IBM PC emulator. Atari is currently working on making the emulator as compatible as possible with IBM programs. When the emulator can run a so-called "wish list" of IBM programs, including Lotus 1-2-3, it will be released for an estimated £300-£400. Atari expects this to be before the end of the year.

On the ST software side, Atari was demonstrating Fastcom, its Gem based comms package. In addition to offering all the standard communications features it supports split baud rates for accessing Prestel and other 1200/75 systems.

Atari also demonstrated completed versions of several pieces of software that have previously only been seen in test-only states. These included Neochrome and the much awaited ST version of Star Raiders.

In one corner of the stand an ST sat in front of what looked like a BBC computer's screen display. This was in fact the first showing of Atari's BBC Basic emulator. This very clever program allows use of BBC Basic programs on the ST, which will help Atari to sell STs to the educational market. The emulator provides all of the BBC Micro's colours, screen modes and VDU commands. A future version will even allow use of 6502 machine code using BBC Basic's built-in assembler.

At one point in the show, Leonard Tramiel (who is interviewed in this issue of Atari User) could be seen demonstrating Microsoft Write to a delighted crowd of passers-by. Microsoft Write is the ST version of Microsoft Word which has been very successful on the IBM PC and Apple Macintosh. The ST implementation does not include outlining, but does include all of the facilities of professional word processing programs including foot notes and multiple fonts.

Also on the Atari stand were several companies demonstrating their new pieces of software. Microprose was showing its Silent Service submarine simulator which has just been converted for the ST. Microprose promised that most of its other bestselling titles would also be converted for the ST, but was reluctant to give specific details.

Mirrorsoft was previewing its Art and Film Director packages for the ST. Art Director is a professional drawing and painting program which

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Just a few of the many and varied stands at the show

includes such tools as smudge, smear, rotate and distort. It also features colour cycling for animation effects and will show a picture on screen in grey scales so that you can see what the printed work will look like.

Film Director allows you to create every element of an animated sequence on screen. It includes such commands as cut, invert, zoom and even slow motion. Music and sound effects can also be added to complete your films or presentations. Both packages will sell for £49.95 and will be available from the beginning of this month.

Next to the Atari stand GST was demonstrating 1st Word Plus, its new word processor for the ST costing £99.95. 1st Word Plus is based on 1st Word, which is bundled with all STs, but it includes footnotes, a built-in spell checker and mail merging, as well as allowing graphics to be pasted into documents. To complement 1st Word GST has released a mail merge program called 1st Mail, which costs £19.95.

GST has also signed a distribution deal with American software house Antic. This will make Antic's ST programs easier to buy in the UK, including the much sought-after CAD-3D, a 3D drawing program from Tom Hudson, the author of Degas.

On the Advanced Systems and Techniques stand two new ST memory expansion boards made their debut. The first allows 520ST owners to upgrade their machines to 2Mb of memory and the second lets 1040 owners upgrade to 4Mb. Both boards will cost approximately the difference between your present ST and a 2080 or 4160 model.

Star attraction of the Computer Concepts stand was the Fast ST Basic cartridge. Fast ST Basic is far more powerful than Atari's version of Basic, being faster, integrable with Gem and featuring a range of debugging facilities. Computer Concepts was also selling a new cartridge called BackPack, which contains nine desk accessories. Both cartridges are reviewed in this month's *Atari ST User*. FastBasic sells for £89.90 while BackPack costs £49.95.

Software Punch from Liverpool was demonstrating its 20Mb hard disc units and Boffin its ST word processor. Boffin costs £99 and has a built-in graphics editor which allows you to design diagrams and pictures for pasting into your documents.

‘Atari's future looks assured’

Even outside the specific Atari area there was plenty of interest. Rainbird and Activision could be seen showing off new and old titles for the Atari 8 and 16 bit ranges. Gathering large crowds on the Rainbird stand was StarGlider, the new 3D game loosely based on the Star Wars theme.

Activision was displaying several new games for both Atari ranges. Most notable of these were Hacker II, the follow-up to the sucessful Hacker, and two new games from Infocom: Moonmist and Leather Goddesses Of Phobos. In Moonmist, you play an amateur detective who must solve a murder mystery in a spooky castle. Leather Goddesses has you kidnapped by evil women from Phobos, one of the moons of Mars. It can be played in any of three modes which range from rude to lewd. The program's descriptions and adventures become more adult as you progress through the modes. Watch Brillig's column for more details soon.

Softechnics followed up its successful Rhythm spreadsheet with another desk accessory, a word processor called DeskWrite. Not only is DeskWrite extremely easy to use, but it is available from within any other Gem program that you might be using.

Beyond had designed its stand to resemble the bridge of the starship Enterprise, for the preview of its latest game – Star Trek. The game features superb digitised pictures of the various crewmembers. Beyond is producing the game to commemorate the 20th anniversary of the TV series. The game hits the shelves this month on the ST with hopefully an Atari 8 bit version following soon.

Llamasoft was demonstrating the 8 and 16 bit versions of Colourspace plus its range of 8 bit games. Owner Jeff Minter could be seen with a large grin on his face – a result of seeing the blitter demonstration. Apparently ST Colourspace will run faster with the blitter fitted. He also hinted at the possiblility of Colourspace II for the ST range.

Overall the show demonstrated not only Atari's commitment to its whole product range, but also the vast support provided by third party companies. On both the 8 and 16 bit fronts, Atari's future looks assured.

MicroLink in association with TELECOM GOLD

NEWSLETTER

BIG TOP GOES ON-LINE

COMPUTER communications have transformed the business operations of Britain's biggest travelling circus.

MicroLink membership means that the American Circus – so called because of its three-ring, US style presentation – can utilise the very latest telex and electronic mail facilities.

But more importantly, a cellular radiolink to the public telephone system ensures that the "office" is no longer cut off from the outside world when the 30-waggon circus is travelling hundreds of miles between venues.

The computer and modem in the administrative trailer ensure that even when the show goes on the road there is constant communication with headquarters and with booking agencies in the town ahead.

"Using the Racal Vodata system and MicroLink we can do business just as efficiently as any permanently-based entertainment, like theatres for instance", says Ian Butson, administrative director of the circus.

"With 12 shows a week and up to 3,500 people at each under our Big Top, you can imagine what a difference PSS, telex and E-mail have made to running our operations.

"We are on the road from March to November and again over the Christmas/New Year season so you can see why I believe very strongly in the value of computer communications as a business resource".

Technology aids race relations

AS community relations officer for Hillingdon, the third largest London borough, Charan Rai has a big job on his hands.

His main function is to see that, in accordance with the Race Relations Act of 1976, there is no race or colour discrimination by employers in his area.

The size of his task can be seen from Hillingdon's 230,000 population and its concentration of large-scale employers such as Heathrow Airport – 50,000 work there – British Airways, Rank Xerox, EMI, Heinz and Express Dairies.

Fortunately, Indian-born Mr Rai has MicroLink's electronic mail and telex facilities to help keep him in touch with the many firms, union branches, central and local government departments he has to deal with.

Large numbers of the general public also come to him with questions.

Says Mr Rai: "Hillingdon has a large, racially diverse population living in an area that encompasses the extremes of run-down tower blocks and the stockbroker belt.

"But we have excellent community relations here, and we intend to keep things that way.

"We are greatly helped in this respect by our computerised case record system and by other new technology advances such as MicroLink".

Transatlantic link

MICROLINK has made history with the first ever interactive transatlantic computer hook-up.

With the aid of a communications satellite, MicroLink and giant American database Mnematics have set up a complex electronic gateway enabling the exchange of messages between micros in all parts of the US and UK.

It allows MicroLink subscribers not only to send messages to America, but also to take advantage of a vast array of services offered.

Stock market watchers can access instant information on share movements from Dow Jones, and there are over 40 sections for doctors, dentists, lawyers, writers and other special interest groups.

Leading news agency Associated Press supplies a 24-hour-a-day global information service.

Wildlife lifeline

THANKS to MicroLink, UK birdwatchers were able to follow the progress of a unique Japanese wildlife fund-raising event.

The 24-hour Birdathon was held to raise money to buy land for a breeding preserve for Japanese cranes.

Organisers hoped for five million yen through sponsorship of 16 teams who spent a full day and night scouring the Japanese countryside for different species of birds.

Taking part was MicroLink subscriber Yuichi Ishikawa. Armed with a mobile phone, acoustic coupler and portable micro, he was able to send regular reports to the MicroLink computer.

Phones' wasted weeks

A NEW survey by British Telecom has revealed that the average businessman wastes the equivalent of one week a year failing to communicate by telephone.

Statistics show that one in five messages left is either misinterpreted or lost, and four out of five calls find the number engaged or the other person unavailable.

As a result more and more business people are turning to electronic mail as a means of ensuring their messages reach their destinations – and the fastest growing of these systems in the UK is MicroLink.

According to the BT survey the average business person makes 2,500 calls a year, two-thirds of them to individuals who, for some reason, are unavailable at the time.

YOUR chance to join MicroLink – turn to Page 45



Accent is on pure adventure

By Brillig

ON my inquiring why I had seen so little correspondence from readers of late, one of my YTS filing gnomes shamefacedly confessed that he had recently filed away a huge pile of unanswered letters after a lunchtime liquid celebration of his pet budgie's birthday.

Following a rigorous search of my office suite of caves, a large pile of missives was discovered filed under K (Kries for help). Said apprentice has been duly reprimanded and told to desist from lunch-hour imbibing of Brilling's Best (mine concoction, adapted from an ancient recipe for leather tanning and molasses and often used in the treatment of flatulent bats). As I warned him, even a half-pint of my famed brew requires a convalescent period of no less than two weeks.

So if you haven't yet seen your request for assistance answered in these pages, please be patient – all my apprentices are on double overtime trying to catch up.

Those of you wanting help this month range from Conrad Dillon of Llangollen who's had trouble in the Payoff, to J. Brassington who wants to know about the map that she's found behind the guarded door in Enchanter. Hopefully the clues I've provided will give you a game without giving it away!

My thanks to Kevin Creasey of Leicester for his hints on Quasimodo and to Mike Moulton of Halstead and Dave Fox of Kemsing for their tips

→

CLUES CORNER

THE PAYOFF

Can't put the bit back when the drill breaks?
STIB EROM ROFK OOL
What use is the list of numbers?
NEPO OTXO BHCI HWUO YSLL ETTI
Trying to get into the car in the car park?
YEKE HTSA HENO EMOS
Can't open the safe?
NOIT ANIB MOCE HTRO FHSA BURN EHTH SATE G
Want to get past the guard dog?
TAEM EVIG NEHT TAEM GURD
Costumier proving an obstacle?
REI MUTS OCTI H
Trouble with the fire escape?
ROOD ERIF OGNE HTRO ODER IFNE PORO ODER IFTL OBNU TENI BACE VOM
Sticky problem with the window?
PMUJ NEHT REPA PSWE NKCI TSEL CAER TDAE RPS

LORDS OF TIME

Can't get past the cave people?
ELPO EPEV ACEH TTAN IAGA TIEV AWNE HTSU RUAS OTNO RBEH TTAR ORRI MEHT EVAW
Want ale from the bartender?
DLOG FOTE GGUN EHTM IHEV IG
Need access to the starship?
TELT NUAG EHTG NIRA EWEL IHWR ATSN ELLA FEHT YRRA C

ENCHANTER

- *SMOO RTNE CSUL SNAR TEHT FOPA MASI TI*
- *LICN EPEH THTI WPAM EHTN OSTN IOPG NISA REDN AGNI TCVEN NOCY RT*
- *SMOO RTNE CSUL SNAR TEHT FOTU OVAL EHTS EGNA HCSI HT*

HULK

Can't leave the dome?
EDIS TUDO GNEH TPIL ETIB NOTT UCHS UP
Want to go somewhere else other than the underground room, field and dome?
TSEW OGNE HTTI RETN EEMO DAEE SUOY REVE NEHW

SNOWBALL

Stuck after leaving the coffin?
- *NRUT NISN OTTU B3HS UPNE HTHT RONO G*
- *NIFF OCOT NOPU OGNE HTNI FFOC EVEI RTER OTHT UOSO G*
- *HTRO NOGN EHTY RAUT ROMO TPUO G*

MORDON'S QUEST

Pygmy proving a pest?
YMGY PLLI KNEH TEPI PWOL BEKA MSEI RREB DNAS NROH TOOB MABH TIW
Carnivorous plant a problem?
YMGY PHTI WTNA LPDE EF

with Mediator. As useful as those tips were, I have decided that for the time being the subject matter of this column will be restricted to pure adventure: That is, themes that do not require arcade skills to solve them but rely purely on the old grey matter.

Although games like Mediator and Quasimodo involve problem cracking and are clearly very popular, they do not come under my personal definition of adventures. I am becoming rather more conservative in my old age and prefer to rely on my intellect (which is, like Marvin's brain, the size of a planet) rather than my hand and eye coordination (which has become a trifle slower now that I'm 246, despite regular infusions of Old Warlock's Wonder Tonic.

And now it's your turn to help. Can anyone assist Patty Hearne and Dave Edward of Liverpool who are bemused by Waxworks? They've opened the sarcophagus and fallen through the trapdoor but all to no avail, it seems.

Brian Houghton is having difficulty with QA and Opera House. In QA, he has the orb and disc but is stuck at the river. He's been into the village, volcano and two of the three huts but can't get into the third hut without getting spiked.

In Opera House, Brian can get into the Phantom's lair and back up again into the opera house but all he seems to do is go round in circles.

Chris Heath from Oswestry cannot get past Pluto, god of the underworld. He doesn't mention the title of the adventure, though – can anyone identify it and help?

Finally, I made passing reference in the September issue to what I believed to be Belboz's close friendship with Software Express of Birmingham. I have since received this amusing letter from Peter Fellows, Technical Director of Software Express.

"Belboz does indeed drop in from time to time but you know what wizards are – sometimes he looks like a postman and sometimes he looks like the van driver from our freight forwarders. Dealing with shape changers can be very confusing.

"He's also very excitable. The last time he came a traffic warden tried to give him a ticket for parking his broomstick (cunningly disguised as a Sherpa van) on double yellow lines. The flashback from his vain attempt to turn her into a frog put a huge crack in our front window – now how do we explain that to the insurance company?"

Nice one, Peter . . .

Keep writing, adventurers, my gnomes are really on the ball now.

Exciting adventuring! ■

GLITCH OF THE MONTH

CLIVE Braidwood of Bromborough in the Wirral has spotted this "feature" in The Payoff. Once you've sold the gem for $40,000, it's possible to go back to the safe deposit box, open it and take another priceless gem! A large T-shirt is on its way to you, Clive.

CONSIDERING ALL THE OPTIONS

I RECENTLY bought Solo Flight and Kick Start for my Atari 800XL. The instructions for both cassettes are exactly the same regarding loading procedures.

Both say: "Press Play on cassette, then switch on computer and hold down the Start button, then press Return and the program will load".

When I first did this with Solo Flight I thought perhaps I had made a mistake. I then started again and got the same results.

At first I thought I had bought a faulty cassette, until I started all the loading procedures again, except this time instead of just pressing the Start button when switching on the computer I held down both the Start and Option keys, and my programs loaded.

Is this just a misprint or are the cassettes supposed to load under these instructions? – **M.I. Ally, London SE23.**

● The normal load procedure with the 800XL is to hold down both Start and Option while you switch on. The Start key tells the computer to do a tape load and the Option key tells it not to use the built-in Basic language.

When some of these games came out – before the XL series was released – Basic was on a separate cartridge which could be inserted or removed at will, but now the Option key takes care of that for you.

Unless a game specifically states that it requires Basic to be present, hold down both Start and Option for all tape loads.

Getting it right

IS it possible to alter the Get It Right! checksum program so that you can check a section from the middle or end of the game being typed in instead of waiting for it to be checksumed from the start each time?

That is, if you find you have made typing errors several times between, say, line 1000 and 2000 then after correcting the typing mistakes you have to wait for lines 10 to 1000 to come up on the screen before you can check your amended errors.

Is it possible to LIST "C:" 1000-2000, or any other lines you want to check, instead of waiting for the lot to be run through?

I hope you can help as it gets a bit tedious if you happen to make a mistake towards the end of a long listing. – **K. Edwards, Runcorn, Cheshire.**

● You can indeed use Get It Right! to checksum certain portions of a program.

This is very useful when you already know that 99 per cent of the program is correct, and you just want to re-check a couple of lines.

To do this use LIST "C:" as normal, but follow it with a comma and the line number range you want. For example:

```
LIST "C:",100,500
```

would list only lines 100 to 500, and:

```
LIST "C:",1000
```

would list line 1000 only.

You can then feed the tape to Get It Right! exactly as before.

80 column extensions

I TYPED in the 80 column text and graphics programs from the August 1986 issue of Atari User *into my 130XE and was very impressed with the results.*

I intend to buy a word processor – either Paperclip or Superscript – and a database. Is there any way in which I could obtain an 80 column display from those software items on the TV or monitor? – **K.N. Turner, Herne Bay, Kent.**

● Most commerical programs do not recognise any of the third-party 80 column add-ons at present. However, now that the Atari XEP-80 is on its way we can look forward to 80 column versions of the more popular word processors and speadsheets.

Some allow 80 column already, but you'll have to check which kind of 80 column board they support.

Plugs and ports

IN the Gadgets article in your August 1986 issue you mentioned that when you use pins 3 and 4 it is possible to omit T1,BR1 and C1 from the second board. Does this mean it would be possible to omit the second power plug too?

Is port 2 (and 3 and 4 on the 400/800) usable at the same time for the same or other purposes?

Is it possible to turn one port to output while the outer is used for input?

In the parts list you did not mention where you got the case you showed, it looked like there was room for two PCBs. – **M. van Nisselroy, Heerlen, The Netherlands.**

● If you omit the power supply components from the second board you may also miss out the second power plug. Connect the mains supply to the 240V AC connectors on both boards.

Also connect the 12V and 0V terminals marked Auxiliary Output on each board to its counterpart on the other →

Happily bitten by the bug

I BOUGHT an 800XL/1010 kit for my son last Christmas and I must admit became quite interested myself.

But if I had not discovered your magazine and taken out a subscription I know my interest, and perhaps also that of my son, would have waned.

I would like to praise two companies that advertise in your pages. My son acquired some 400/800 games that would not load into the XL, so I ordered XL Fixer from Stocksoft of Birmingham.

Alas when the tape came – within three days – it would error before completely loading. I sent it back with covering letter, and just over a week later we received the new XL Fixer that worked fine, accompanied by a letter of apology and a free games tape that my son was over the moon with.

And yesterday we have just received our 1029 printer supplied by Compumart of Loughborough. It arrived in A1 condition two days after the order was placed.

We now have a 1050 disc drive as well, bought from Dixons with another 800XL, plus software for the same price that a new 1050 would cost from most dealers. Yes, we have certainly been bitten by the bug. – **Mervyn Davies, Colchester, Essex.**

board.

If you read the first article in the series – *Atari User*, June 1986 – you will see that you can make each pin on the joystick port act independently of the others.

One pin may be used for input with seven outputs, or any other combination.

If you want to use ports 3 and 4 on an Atari 400/800, just use Port B at location 54017, and the Port B Control register at 54019. They function in exactly the same way as their Port A counterparts.

Don't attempt this if you are using an XL or XE, as Port B is used to control the operating system and Basic – POKE them wrongly and you can say goodbye to your program.

Cases are available from Maplin Electronics.

Getting gadgets

I WAS looking through my Atari User magazines the other day for something to do when I came upon the first part of Ken Golding's new series about gadgets showing how to construct a simple light sensor via the joystick port.

Seeing there were no complications I decided to do it, so the very next day I went to Tandy's to obtain the parts.

Surprisingly the man said they had never stocked the parts. Would you please tell me where they are obtainable as I am quite keen on making this light sensor. – **P. Stewart, Wembley, Middlesex.**

● If you can't get the parts from Tandy, pop into your local W.H.Smiths and get a copy of the Maplin Electronics catalog. They should be able to provide you with everything you require.

Out in the cold

THE Atari 800XL has been on the market for at least three years now. Why is the software for the Atari still only written in 48k?

Whenever I load in a game on my 800XL 16k is lying idle in the machine.

For this reason there are games, like Solo Flight 2, that lack digitilised speech, even though the Commodore 64 version has this luxury.

Old 400/800 owners don't have to be left in the cold. A 48k and 64k version of the same game would ensure we are using our machine's memory to the full. This has already been done on Mercenary from Novagen.

Finally, it seems that some software houses like Elite still don't want to know the Atari.

To prove we are ready to buy their software, every one of us Atarians must write to these anti-Atari software houses and ask them for software releases.

But remember every letter counts, so if you want to play Commando, or even Ghost 'N' Goblins in the near future on your Atari, get writing to them. – **Nadeem Parvez, Wavertree, Liverpool.**

● We can only echo what you have said – if you want to see Atari versions of all of those wonderful new games you've been drooling over on the Commodore 64 and the Spectrum, then write to the companies concerned.

There is no point writing to us about it as we have no hold over what software houses decide to release. What will make a difference is a flood of your letters on their desks.

The same applies to the 48k/64k debate, but don't forget that it costs the software houses more to produce two versions of a game, which might push up the price.

Roughly 20 per cent of the Atari market consists of old 400 and 800 owners, so they can't afford to ignore the old machines completely, nor would we wish them to.

Printer interfaces

IS it possible to link an Atari 1027 printer to an Atari 520 ST? – **Michael Woods, Chadderton, Oldham.**

● Sorry, but the answer is a plain and simple no. The 1027 uses a special form of serial interface specially designed for the Atari 8 bit range, whilst the ST uses a Centronics parallel interface. Sorry!

Boot error

I OWN a 130XE and a 1050 disc drive with which I have a problem.

Every time I boot up a disc, the drive busy light comes on and the computer beeps every two seconds, then comes up with a "BOOT ERROR".

This only happens with my

Player Missile Graphics

It's apologies time folks! Last issue's Player Missile Graphics article by Stephen Williamson featured two programs and unfortunately the lines from Program I were accidentally reprinted instead of the first few lines of Program II.

For those of you who are having trouble getting the checksum to match, here are the correct lines for Program II.

The checksum printed was correct, and after you've typed these lines in it should match.

Our thanks to Mr. K. Miller of Blackpool who pointed this out – a T-shirt is on its way to him.

```
10 REM  PLAYER MISSILE GRAPHICS
20 REM   by Stephen Williamson
30 REM    for Atari User
40 REM        BUGHUNTER
50 REM  PROGRAM II - PART 6
60 GRAPHICS 5:POKE 755,0
70 ? "BUGHUNTER"
80 ? "INITIALISING - PLEASE WAIT"
90 REM **INITIALISE PM SYSTEM**
100 PMB=PEEK(106)-16
110 POKE 54279,PMB
120 PMBASE=PMB*256
130 POKE 623,20
140 POKE 559,62
150 REM ** INITIALISE VARIABLES**
160 SCORE=0:LIVES=3
170 M=0
180 REM ** LOAD MACHINE CODE DATA **
190 FOR J=0 TO 41:READ A:POKE 1536+J,A
:NEXT J
200 A=USR(1536,PMBASE,2048):REM CLEAR
PM DATA AREA
210 FOR J=0 TO 86:READ A:POKE 1580+J,A
:NEXT J
220 FOR J=0 TO 20:READ A:POKE 1670+J,A
:NEXT J
230 REM ** LOAD SHAPE DATA **
240 FOR J=0 TO 10:READ A:POKE PMBASE+1
024+164+J,A:NEXT J
250 FOR J=0 TO 19:READ A:POKE PMBASE+1
280+J+115,A:NEXT J
260 FOR J=0 TO 11:READ A:POKE PMBASE+1
536+J+162,A:NEXT J
270 FOR J=0 TO 25:READ A:POKE PMBASE+J
,A:NEXT J
280 REM **PLOT MISSILES**
290 POKE PMBASE+768+130,160:POKE PMBAS
E+768+127,1
300 POKE PMBASE+768+131,160:POKE PMBAS
E+768+128,1
310 POKE PMBASE+768+132,160:POKE PMBAS
E+768+129,1
320 REM *** SET HORIZONTAL POSITIONS *
*
330 HORIZ0=130:HORIZ1=144:HORIZ2=144
340 HORIZ3=INT(RND(1)*10)+60
350 HORIZ=0
360 POKE 53248,HORIZ0:POKE 53249,100
370 POKE 53250,HORIZ2:POKE 53251,HORIZ 3
380 POKE 53252,126:POKE 53255,109:POKE
 53254,119
```

own formatted discs which contain FMS. SYS files. Could you please help me? – **Richard Powell, Sheffield.**

● It sounds as though your discs have not been properly formatted. Boot up your DOS Master Disc (DOS 2.5 if you can get one, otherwise use DOS 3 if you must).

If this won't work, your drive is definitely at fault. If READY comes up, type DOS. When the DOS menu appears select the option for FORMAT Disc, and tell it which drive to use.

The drive should rotate and "tick" for about half a minute, then stop.

Try to duplicate your DOS disc on to the new disc (follow the instructions in the manual).

Now try to boot-up your new disc. If this doesn't work take your drive back to your dealer as it may well be faulty.

Magic formula

HAVING read the letter in the September issue by S.G. Pass, who complained about the lack of the Tan function, I would like to complain about the lack of the ACS (anti-cosine) and the ASN (anti-sine) function.

The good news though, is that I consulted a friend of mine who gave me the following formulae:

$ASN=2*ATN(x/(1+ (1-x^2))$
$ACS=[(90-x)-ASNx]+x$

where $X<=1$.

Note that ATN is already in the computer.

I hope that some readers will find these useful. – **Neil Toulouse, Handsworth Wood, Birmingham.**

Checking checksum

I HAVE a problem with Cavern Escape. When I try to list "C:" it to tape to checksum it, it's all right for the first column of checksum numbers.

Then the noises it makes when it is saved and played go very low and the checksum program says it is finished.

Is it my recorder or have I bodged everything up somewhere?

Also, how can I stop the checksums going off the screen as soon as the last lines are printed up? – **Sarah Houghton, Milton Keynes, Bucks.**

● It sounds to us as though the tape has not been LISTed properly. Make sure that you are following the instructions to the letter.

If that is not the problem, it could be a mistake in your typing of the Get It Right! program, or a fault in the recorder.

You can use Control+1 to start and stop the listing at will, or type in the extra lines we printed in the October 1986 Mailbag.

ATARI USER Mailbag

WE welcome letters from readers – about your experiences using the Atari micros, about tips you would like to pass on to other users . . . and about what you would like to see in future issues.

The address to write to is:

Mailbag Editor
Atari User
Europa House
68 Chester Road
Hazel Grove
Stockport SK7 5NY

Shedding new light

I READ in the September mailbag that you can get a light pen for £16.50 with software, but do you need special software to use a light pen?

I have a joystick operated drawing program and I wondered if I could use a light pen with this?

Could you also tell me if there is a drum synthesiser available on cassette? – **A. Patterson, Basingstoke, Hants.**

● A light pen functions very differently from a joystick or a touch tablet, and so needs special software.

Your normal joystick-based drawing programs will not work with a light pen, so it's a good idea to make sure that software is provided if you are thinking of buying one.

2 Bit Systems in Dunstable, Bedfordshire do a drum synthesiser called Digidrum on tape or disc which features real digitised drum sounds.

Hair restorer

I WAS typing in Fence Builder from the September issue of Atari User *and it was getting late so at line 3540 I stopped and saved it to tape.*

Then I loaded Get It Right! and did the checksum. I was pleased to find I had only made two slips so I tried to boot the program back in but I kept on getting error 143 at line 0.

I am using an 800XL and a 400 tape recorder and I heard something about if I typed LPRINT it would clear the head buffers so I tried it and still got error 143.

Could you tell me if there is any way of retrieving the program as I am pulling my hair out? – **A. Miah, Frankley.**

● The LPRINT trick is only applicable to the old 400/800 machines, and in any case must be done before SAVEing, not before loading.

It sounds as though your tape has not saved correctly and there is no way to recover it if this is the case.

Try loading the program back from the LISTed version you used with the checksum. First type NEW, then use ENTER "C:" to load it back in again.

Cassettes and copyright

I AM thinking of buying the 1050 disc drive, but since I received my 800XL I have been a cassette user, so all my programs and games are on cassette.

Would I be able to transfer my cassette games to disc, that is, of course, making sure that I wouldn't infringe the copyright? – **Karl Westerside, Winsford, Cheshire.**

● The problem is that you would actually be doing just that! In your case you have bought the cassette games and now want to transfer them to disc for your own use.

This is a fair enough aim, and one that software companies would not object to.

However, if they made their tapes so that this sort of transfer was easy then they would also be encouraging the pirates to do the same, so most commercial tapes are protected against this sort of copying.

There are programs which claim to copy a cassette game to disc, but we rather doubt their effectiveness on the more recent protection methods, and you would probably be wasting your money.

Faulty keyboard

MY 800XL keyboard has gone wrong. The semi-colon key seems jammed because it constantly repeats after any key is pressed.

Is this due to the Revision B Basic, because I tried the test in your March issue and the answer was 96?

Will the Rambas program in

→

the July issue cure this bug?

With regard to the solution of the Play key on the 1010 data recorder: I glued the key back together again using superglue 3.

Then, knowing the repair job would not last very long under constant use, I swapped it with the pause key. – **James Ryan, Southampton.**

● This sounds more like a faulty keyboard than a Basic problem. There are no known bugs that behave like that, so you'd be better off taking it back to your dealer for repair.

Printer programs

I AM amazed by the numerous letters condeming the apparent lack of software for the Atari 1029 printer. It is true that the Printshop program will not work but most others do, with only slight differences.

I have two screen dumps (Micro-Painter and Touch-Tablet) and about four other programs which work fine.

Superscript has a built-in printer driver for the 1029 and Rubber Stamp, Typesetter and so on will all work if the saved screen is printed using a separate screen dump.

Using these utilities, fonts of all styles and sizes can be obtained and also most graphics imaginable. – **Alan Wheatley, Buckie, Banffshire.**

High scoring

IN Bruce Lee, third screen, for an unbelievably high score wait at the bottom of the screen for both the enemy. Climb up the rigging about three moves then fall off (by moving joystick left or right).

Quickly try to grab the rigging. If you have done it right you should be stuck in an endless loop of trying to fall and trying to hold on.

If you get the enemy underneath you they will not be able to touch you, but you knock the stuffing out of them. – **S.K. Stupple, Mansfield, Notts.**

USING XIO FROM BASIC

I AM trying to customise DOS 2.5 so my own wording and extra functions are installed.

I have written a small program to read in and POKE the new values (location 15400 decimal, or thereabout) into memory.

Whenever I check that these values are in memory, using the memory monitor published in a past issue, they are all there and the Ascii values are also correct.

When I call up DOS 2.5 the old values are there, but when I return to Basic and call up the monitor, my values are the same ones which I have POKEd.

Is there something that I have missed, or is there a checksum which totals the values and then converts them back?

Another problem arises when I use the Micropaint utility program. This file loads in Paint picture files to the screen, to the top half. Should this happen?

An additional problem is that I am writing a DOS-type utility program and one of the options is to go to DOS. This program is heavily protected, and I wish to keep it that way, but when I return from DOS it leaves the user in Basic, which I do not want.

Are there some POKEs which will allow DOS to jump back to the start of my Basic/machine code program? – **Barry Finlayson, Carrickfergus, Co Antrim.**

● Your problem is being caused by the fact that there are two parts to the DOS system.

The first, DOS.SYS, is held in memory permanently, taking up about 5k. The second part, DUP.SYS, is only loaded in when you type DOS, and contains all of the menu systems.

This means that every time you type DOS all of your POKEd corrections are being overwritten as DUP.SYS is loaded into ram again.

If you want to edit the menus try editing the file DUP.SYS rather than POKEing into memory. Be careful not to increase the length of the items, or the machine code may be corrupted.

A Paint picture is in Graphics 7, and a Micropainter picture in Graphics 15.

As the only difference between the two is that Mode 7 pixels are twice the height of mode 15 ones, the screen memory for a mode 15 screen is twice as large as that for Mode 7.

So when you load a Mode 7 screen dump into a mode 15 display it only fills the top half.

There is no easy way of making a Basic program re-run from the DOS menu, but why not miss out the DOS menu completely and use XIO commands from Basic instead? Nearly all DOS functions can be emulated in this way.

Emulating the others

MY son would like to know if it is possible to buy an emulator for the BBC Micro and/or Spectrum computers. If so, is it possible to load and save Basic programs for these computers on the Atari 130XE?

Finally, can we obtain Cobol (rom or disc) for the Atari? Any idea how much these would cost? – **P.S. Jakubovic, Leeds.**

● There are no BBC Micro or Spectrum emulators (perish the thought . . .) for the Atari 130XE.

If you want a more advanced version of Basic look no further than Basic XE, from OSS. Contact one of the big mail order companies for information.

If you want to run BBC Micro or Spectrum games on the Atari, then the only solution is to write to the software houses concerned and push them into having Atari conversions written.

There is really no point in trying to implement Cobol on a 48 or 64k system, and there are not yet enough 130XEs around to make it practical to write one for the 128k Atari.

Basically, Cobol was written with large mainframes in mind and is an extremely inefficient language at the best of times – and a waste of time and money at the worst.

You would be much better off buying a more micro-oriented language such as Action!

Coldstarts and Resets

PLEASE could you tell me the POKE command to switch the computer off and back on again? Also the command to do the system reset? — **Simon O'Hara, Skegness, Lincs.**

● Actually, it's not quite that simple. There is no POKE to turn the computer off – although there is a little switch at the back!

You can do what is called a coldstart, which means that the computer will clear everything from memory and start up again as though it had been turned off and back on again. This can be achieved by using:

A = USR(58487)

Don't forget to save your program first, because it will be wiped out. You can make System Reset do the same thing by typing:

POKE 580,1

We printed some other methods for handling the System Reset button in the August 1985 *Atari User*. These allow you to re-run the program when Reset is pushed.

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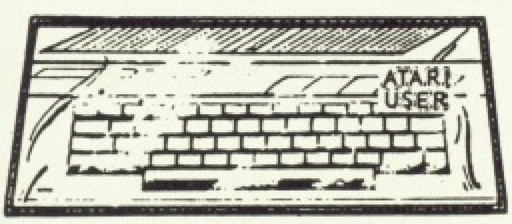
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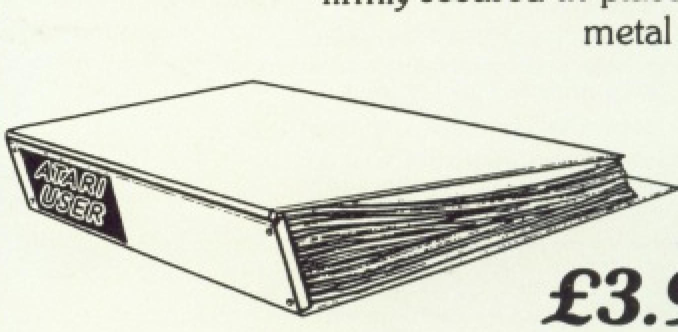
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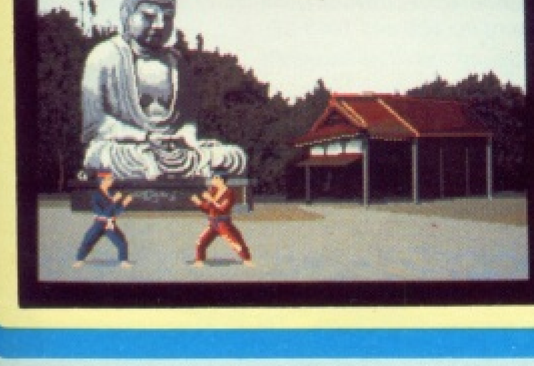


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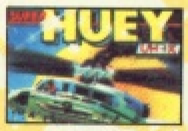
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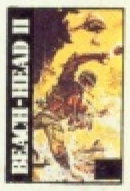
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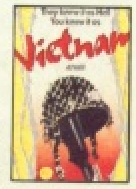
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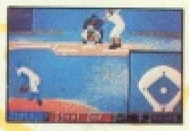
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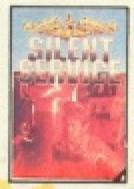
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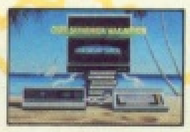
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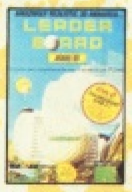
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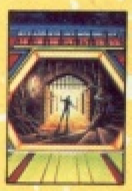
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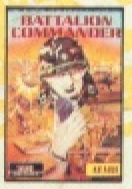
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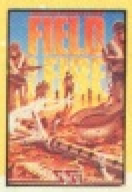
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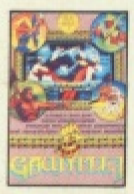
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